308

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Airline	GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A Tel. Rec.	308-2
Airline	55GAA-2501A	308-3
Dixie-Land	110 Recorder	308-4
Emerson	Ch. 120257-D, -P, 120258-D, 120263-D, -P, 120265-D, 120277-D, 120278-D, 120279-B, 120282-P Tel. Rec. Prod. Chg. Bul. 146	308-1
Hoffman	21B179S, U, U2, 21B194, U, U2, 21B352S, U, U2, 21B364, U, U2, 21B367, U, U2, 21B729S, U, U2, 21M193, U, U2, 21M351S, U, U2, 21M363, U, U2, 21M366, U, U2, 21M728S, U, U2, 21P195, U, U2, 21P353S, U, U2, 21P365, U, U2, 21P368, U, U2, 21P730S, U, U2, 21P731S, U, U2, 21U208-5, U, U2, (Ch. 411-21, 412-21) Tel. Rec.	308-5
Magnavox	Ch. AMP-138AA	308-6
Monitoradio	AR-4	308-7
Motorola	45P1, 45P2 (Ch. HS-479)	308-8
Phonola	TK139T	308-9
RCA Victor	21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6255, U, 21-T-6256, U, 21-T-6257, U (Ch. KCS96, A, B, C, D, E) Tel. Rec.	308-10
Rauland	HF155	308-11
Silvertone	5115-2 (Ch. 549.16005) Tel. Rec.	308-12
Stromberg-Carlson	K-21 Series, KH-21 Series, K-22 Series, KH-22 Series Tel. Rec.	308-13

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 6 IN SET 296

Emerson Models 1108D, 1109D, 1110D, 1111D, 1112D, 1113D, 1116D, 1117D, 1120D, 1121D, 1122D, 1123D, 1124D, 1125D, 1126D and 1127D (Ch. 120257-D, 120258-D, 120263-D, 120265-D) were covered in Photofact Folder 6 – Set 296.

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Several new models and chassis, along with late production changes, are added with the publication of this bulletin. Following is a complete list of all models and chassis used in each.

MODEL	CHASSIS	MODEL	CHASSIS
1108D	120257-D	1140F	120257-P
1108F	120257-P	1141D	120258-D
1109D	120258-D	1144D	120277-D/ 120279-B
1110D	120257-D	1145D	120278-D/ 120279-B
1111D	120258-D	1150D	120257-D
1112D	120257-D	1150F	120257-P
1113D	120258-D	1151D	120258-D
1116D	120257-D	1152D	120257-D
1117D	120258-D	1152F	120257-P
1120D	120257-D	1153D	120258-D
1121D	120258-D	1154D	120257-D
1122D	120263-D	1154F	120257-P
1122F	120263-P	1155D	120258-D
1123D	120265-D	1156D	120263-P
1124D	120263-D	1156F	120263-D
1124F	120263-P	1157D	120265-D
1125D	120265-D	1158A	120282-P
1126D	120257-D	1160D	120263-P
1126F	120257-P	1161D	120265-D
1127D	120258-D	1162D	120257-P
1138D	120257-D	1162F	120257-D
1138F	120257-P	1163D	120258-D
1139D	120258-D	1164D	120257-P
1140D	120257-D	1165D	120258-D

Ch. 120257-P

Chassis 120257-P is electrically identical to chassis 120257-D, except a different tuner is incorporated. A schematic of this tuner (part #470823) is shown in Fig. #1. Alignment procedure will be essentially the same as given for tuner 470802 in PFF 6 – Set 296.

When tuner 470823 is used the filament transformer (T1) is omitted.

Ch. 120263-P

Chassis 120263-P is electrically identical to chassis 120257-D, except the tuner is changed to part #470823 and the picture tube is changed to a 24DP4A.

EMERSON CHASSIS 120257-D, 120257-P, 120258-D, 120263-D, 120263-P, 120265-D, 120277-D, 120278-D, 120279-B, 120282-P

PRODUCTION CHANGES
BULLETIN 146

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Ch. 120277-D, 120278-D, 120279-B	Chassis 120277-D and 120278-D are electrically identical to chassis 120257-D, except the volume control utilizes a double pole single throw switch to accommodate the radio chassis 120279-B. The new contrast and volume control (R1) changes to part #390399. A schematic of the radio chassis 120279-B is shown in Fig. #2. Alignment procedure is given later in this bulletin.
Ch. 120282-P	Chassis 120282-P is electrically identical to chassis 120257-D, except a remote control unit is used and the picture tube changes to a 24DP4A. A schematic of the remote control unit is given in Fig. #3.
	The following production changes were made during production and covers the chassis so designated. TO REDUCE TUNER OVERLOAD A 1KΩ resistor which connects from R26 to R25 is omitted. With this change R25 and C27 are added. Chassis incorporating this change are coded as follows: 120257-D (B) 120257-P Initial Production 120258-D (B) 120263-P Initial Production 120263-D (A) 120278-D Initial Production 120265-D (A) 120282-P Initial Production
	TO IMPROVE AUDIO RESPONSE R57 is increased from 1Meg to 10Meg. Chassis incorporating this change are coded as follows: 120257-D (B) 120257-P Initial Production 120258-D (B) 120263-P Initial Production 120263-D (A) 120278-D Initial Production 120265-D (A) 120282-P Initial Production
	TO INCREASE WIDTH On some 21" chassis 120257-D and 120258-D, R94 is decreased from 15KΩ to 10KΩ. Chassis incorporating this change are coded as follows: 120257-D (C) 120258-D (C)
	TO INCREASE TUNER GAIN R50 is decreased from 10Meg to 4.7Meg. The lead connecting R50 to R51 is removed. A two lug terminal strip is mounted on the top of the chassis. A jumper wire is connected between the two lugs. One lug connects to R50 and the other lug connects to R51. Chassis incorporating these changes are coded as follows: 120257-D (D) 120257-P Initial Production 120258-D (D) 120263-P Initial Production 120263-D (B) 120278-D Initial Production 120265-D (B) 120282-P Initial Production
	NEW HORIZONTAL OUTPUT TRANSFORMER T2, horizontal output transformer changed to part#738111. With the new flyback the following changes are required. R94 is decreased from 15KΩ to 8.2KΩ. R97 and C75 are omitted. C73 is decreased from .47MFD to .22MFD. Chassis incorporating these changes are coded as follows: 120257-D (D1) 120258-D (D1)
	TO REDUCE RESIDUAL AUDIO BUZZ A 1000MMF capacitor is added across R102. The sound take-off is moved from the junction of L9 and C30 to the junction of L9B, C31 and R31. Chassis incorporating these changes are coded as follows: 120257-D (E1) 120257-P Initial Production 120258-D (E1) 120263-P Initial Production 120263-D (C) 120278-D Initial Production 120265-D (C) 120282-P Initial Production

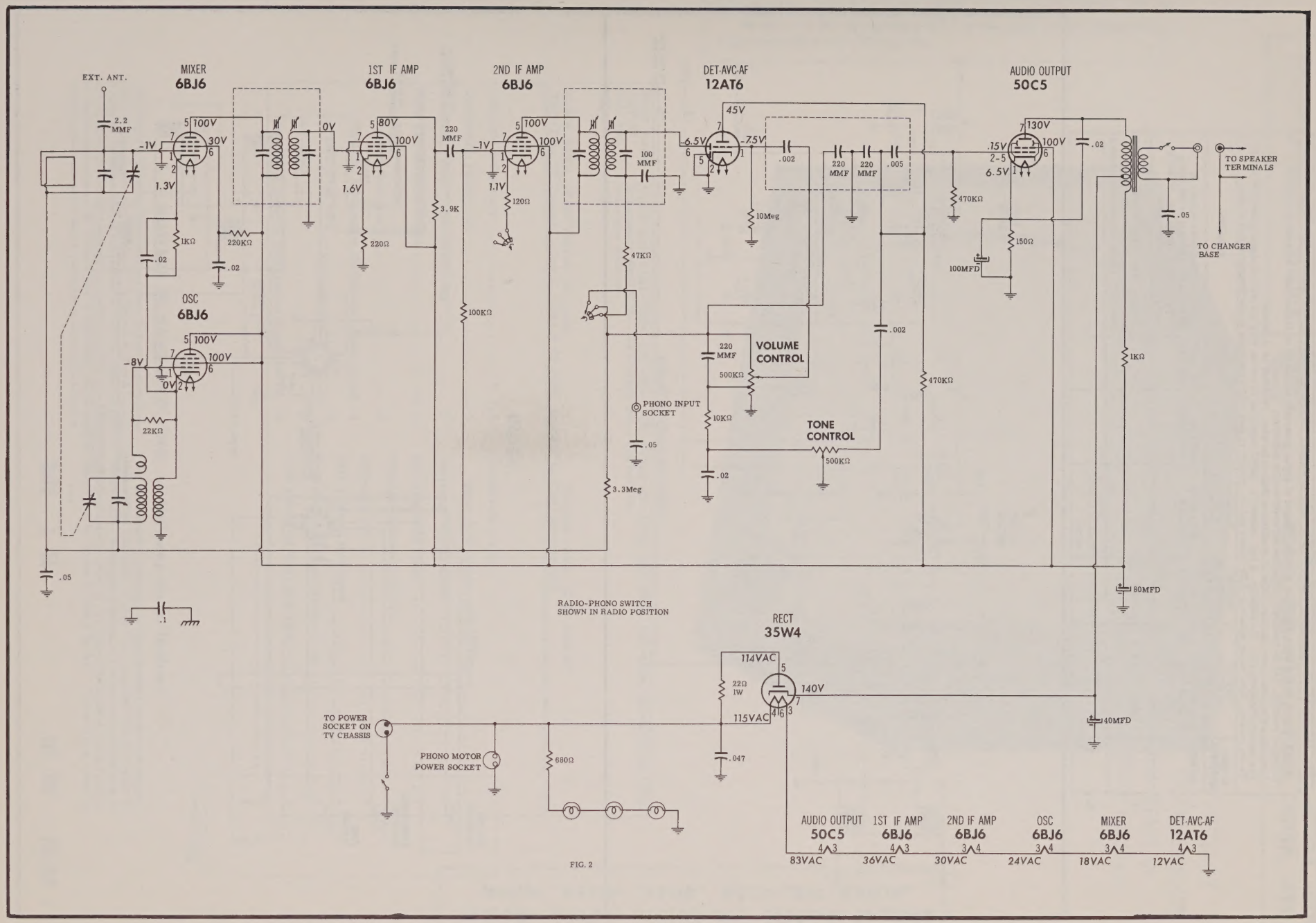
EXT. ANT.
MIXER
6BJ6
1ST IF AMP
6BJ6
2ND IF AMP
6BJ6
DET-AVC-AF
12AT6
AUDIO OUTPUT
50C5
OSC
6BJ6
2.2 MMF
220 MMF
100 MMF
220 MMF
220 MMF
.005
.002
.02
.05
.1
1KΩ
220KΩ
3.9K
220Ω
120Ω
100KΩ
47KΩ
10Meg
470KΩ
150Ω
100MFD
80MFD
40MFD
220 MMF
VOLUME CONTROL
500KΩ
10KΩ
TONE CONTROL
500KΩ
PHONO INPUT SOCKET
3.3Meg
22KΩ
TO SPEAKER TERMINALS
TO CHANGER BASE
RADIO-PHONO SWITCH SHOWN IN RADIO POSITION
RECT
35W4
114VAC
115VAC
22Ω 1W
140V
.047
680Ω
TO POWER SOCKET ON TV CHASSIS
PHONO MOTOR POWER SOCKET
AUDIO OUTPUT 50C5
1ST IF AMP 6BJ6
2ND IF AMP 6BJ6
OSC 6BJ6
MIXER 6BJ6
DET-AVC-AF 12AT6
83VAC
36VAC
30VAC
24VAC
18VAC
12VAC

FIG. 2

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6BJ6 (V1). Low side to B-.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop (radiated)	1630KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

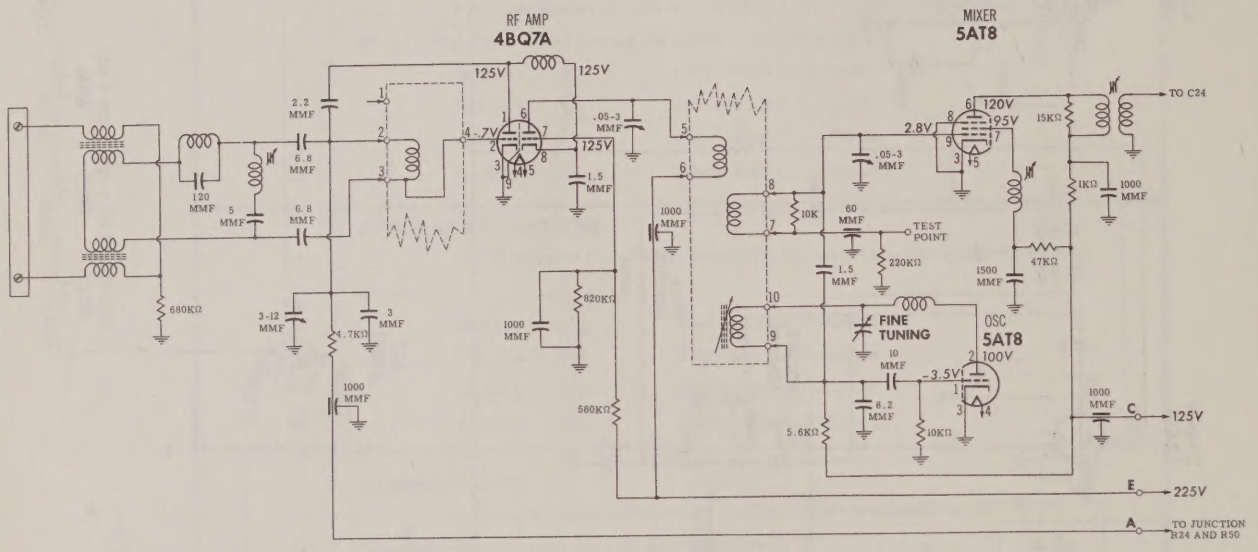

FIG. 1

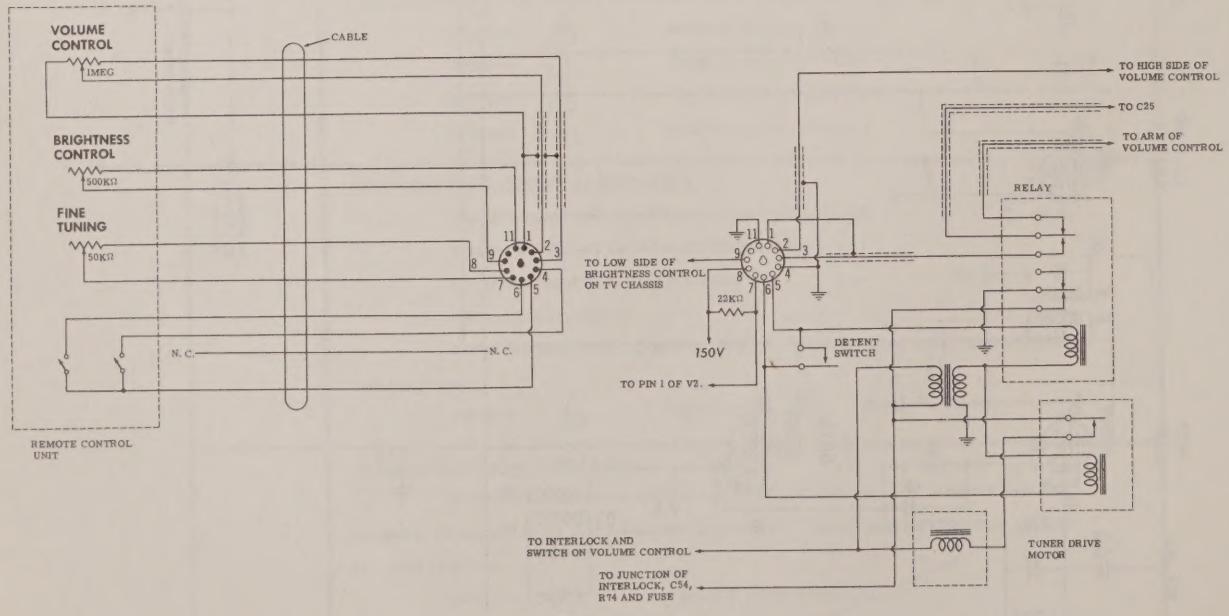

FIG. 3

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

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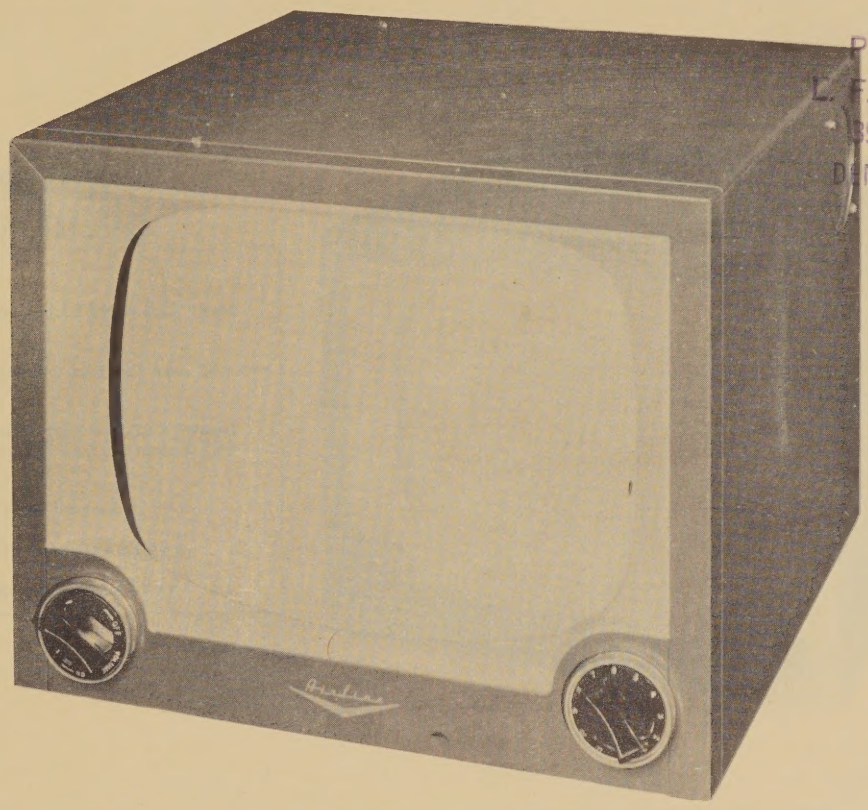
The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

AIRLINE MODEL GSL-4013A

TRADE NAME	Airline Models GSL-4013A, GSL-4014A, GSL-4015A, GSL-4018A, GSL-4113A, GSL-4114A, GSL-4115A, GSL-4118A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Fifteen

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1 Amp. @ 117 Volts AC
TUNING RANGE Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7, 8
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 11
Parts List and Descriptions 12, 13, 14
Photographs
- Cabinet-Rear view 16
- Capacitor & Alignment Identification (Lower Deck) .. 4
- Chassis-Rear View 5
- RF Tuner 15
- Resistor & Inductor Identification (Lower Deck) .. 9

Photographs (Cont)
- Upper Deck Chassis-Bottom View 5

Resistance Measurements 10
Servicing in the Field 1
Schematic (Alternate Tuner) 11
Schematic (TV) 2
Tube Failure Check Chart 3
Tube Placement Chart (Bottom View) 10
Tube Placement Chart (Top View) 3

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RETMA MEMBER

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

PROPERTY
L. F. BLANKENS
3924 MEADE ST.
DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type control knobs from front panel of cabinet.

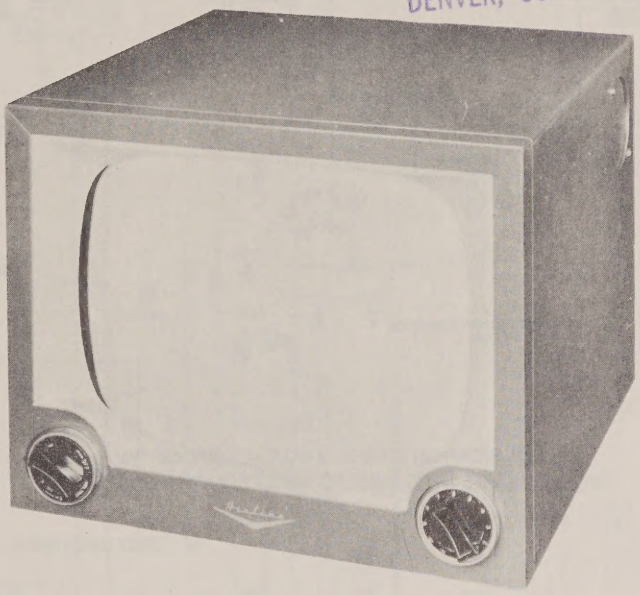
2. Remove 5 metal screws and interlock bolt. Remove rear cover.

3. Disconnect antenna leads from antenna terminal bracket, 2 speaker leads, HV lead and picture tube socket.

4. Remove 12L6GT (V8) from its socket.

5. Remove 4 chassis bolts. Remove chassis.

6. Remove 2 speaker nuts. Remove speaker.



MODEL

GSL-4013A, GSL-4014A, GSL-4015A, GSL-4018A,
GSL-4113A, GSL-4114A, GSL-4115A, GSL-4118A

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet above and slightly to the left of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See Tube Placement Chart on Page 3.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit may be made from the rear control panel of the chassis. Adjust the horizontal hold slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, it is necessary to remove the rear cover and supply power to the set. Adjust the buzz control (R5) for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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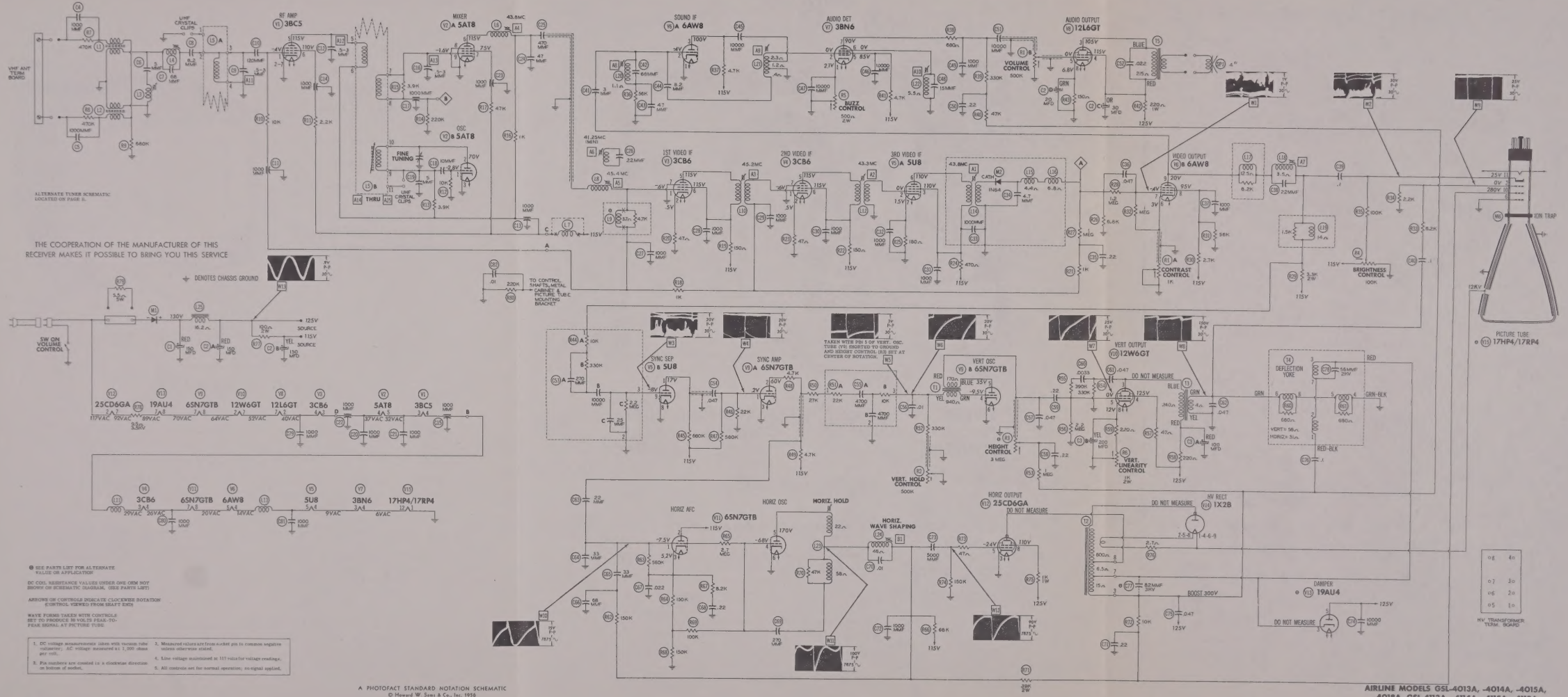
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 11.
VHF ANT. TERM. BOARD
UHF CRYSTAL CLIPS
RF AMP V1 3BC5
MIXER V2A 5AT8
OSC V2B 5AT8
FINE TUNING
UHF CRYSTAL CLIPS
THRU
SOUND IF V6A 6AW8
AUDIO DET V7 3BN6
VOLUME CONTROL 500K
BUZZ CONTROL
AUDIO OUTPUT V8 12L6GT
1ST VIDEO IF V3 3CB6
2ND VIDEO IF V4 3CB6
3RD VIDEO IF V5A 5U8
IN64
VIDEO OUTPUT V6B 6AW8
CONTRAST CONTROL 1K
BRIGHTNESS CONTROL 100K
ION TRAP
PICTURE TUBE V15 17HP4/17RP4
DENOTES CHASSIS GROUND
TO CONTROL SHAFTS, METAL CABINET & PICTURE TUBE MOUNTING BRACKET
SW. ON VOLUME CONTROL
SYNC SEP V9B 5U8
SYNC AMP V9A 6SN7GTB
VERT OSC V9B 6SN7GTB
VERT OUTPUT V10 12W6GT
DEFLECTION YOKE
HEIGHT CONTROL 3 MEG
VERT. HOLD CONTROL 500K
VERT. LINEARITY CONTROL 1K 2W
DO NOT MEASURE
HORIZ AFC V11 6SN7GTB
HORIZ OSC
HORIZ. HOLD
HORIZ. WAVE SHAPING
HORIZ OUTPUT V12 25CD6GA
HV RECT V14 1X2B
DAMPER V13 19AU4
BOOST 300V
HV TRANSFORMER TERM. BOARD
25CD6GA V12 19AU4 6SN7GTB 12W6GT 12L6GT 3CB6 5AT8 3BC5
3CB6 6SN7GTB 6AW8 5U8 3BN6 17HP4/17RP4
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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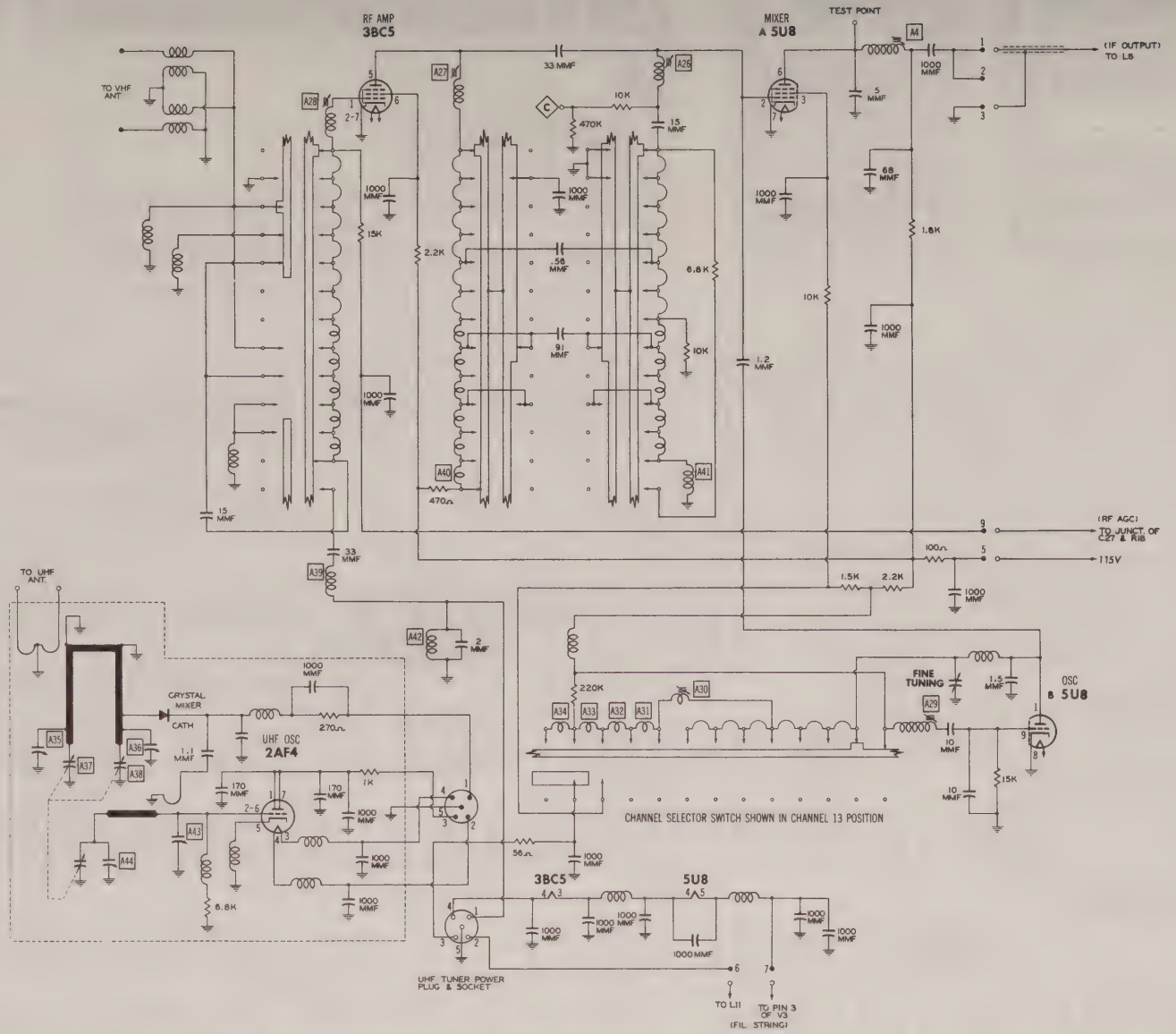
AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A



UHF-VHF TUNER PART NO. R1623 USED WITH MODELS GSL-4113A, GSL-4114A, AND GSL-4115A

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE UHF-VHF TUNER SCHEMATIC

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

PROPERTY OF
L. P. BLANKENSHIP
3424 ADAMS ST.
DENVER, COLORADO

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	3BC8	3BC5	7BK	
V2	Osc.-Mixer	5AT8	5AT8	9DW	
V3	1st. Video IF Amp.	3CB6	3CB6	7CM	
V4	2nd. Video IF Amp.	3CB6	3CB6	7CM	
V5	3rd. Video IF Amp. Sync Separator	9U8	9U8	9AE	
V6	Video Output-Sound IF Amp.	6AW8	6AW8	9DK	
V7	Audio Detector	3BN6	3BN6	7DF	
V8	Audio Output	12L8GT	12L8GT	7AC	
V9	Sync Amplifier-Vert. Oscillator	6SN7GTB	6SN7GTB	9BD	
V10	Vert. Output	12W8GT	12W8GT	7AC	
V11	Horiz. AFC-Horiz. Osc.	6SN7GTB	6SN7GTB	9BD	
V12	Horiz. Output	25CD6GA	25CD6GA	5BT	
V13	Damper	19AU4	18AU4	4CG	19AU4GT may be used as an alternate
V14	HV Rectifier	1KB	1KB	8Y	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: AIRLINE PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V15	17HP4/ 17HP4	17HP4/ 17HP4 17HP4B ②	17HP4/17HP4	17HP4/ 17RP4 17RP4B ②	17HP4/ 17RP4	12L	① Aluminized ② Silver screen "BS"
	21AUP4A ①	21AUP4A ①	21AUP4A ①	21AUP4A ② 21AUP4 ①	21AUP4A ①	13L	
		21AUP4		21AUP4	21AUP4	13L	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	R-1491	PRS150V150	ER15015	TC495	TD-150-150	S-105 Q-135 MMT-0220	TVA-1423
C2A	150	150	R-1487						
B	150	150							
C	30	150							
D	30	25							
C3A	100	150	R-1483	AFE3-81	B060	TCT3094 TC45	TDL-5323	S-090 MTR-2525	TVA-1420 TVA-1311
B	200	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	1000			BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C5	1000			BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C7	5			NPO-D25	2G11	TCZ-050	ET-505	ET-505	5TCC-B-V47	
C7	68			N750-D168	TCN-68	N033		N750L-680	5TCU-Q68	
C8	8.2			NPO-D18.2	2G18			NPOA-8R2		
C9	.5-3					839-3		3115-01-GR5	CT565A	
C10	120			BPD-00012	DD-121	Q064	811-121	UC-5312	5GA-T12	
C11	1000			EF-001	MFT-1000					
C12	.5-3				839-3		3115-01-GR5	CT565A		
C13	1000			EF-001	MFT-1000					
C14	1000			EF-001	MFT-1000					
C15	1000			EF-001	MFT-1000					
C16	.5-3				839-3		3115-01-GR5	CT565A		
C17	1000			EF-001	MFT-1000					
C18	10									
C19	5									
C20	1000			BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C21	1000			BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C22	1000			EF-001	MFT-1000					
C23	1000			EF-001	MFT-1000					
C24	47			N750-D147	TCN-47	G033	N750K-470	NT-5447	5TCU-Q47	
C25	470			BPD-00047	DD-471	Q080	831-471	UC-5347	5GA-T47	
C26	23			NPO-D233	TCZ-23	Z033	NPOK-230	ZT-543	5TCC-Q22	
C27	1000		R-1447	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C28	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C29	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C30	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C31	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C32	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C33	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C34	4.7			NPO-D14.7	TCZ-4R7	T207	NPOA-4R7	ZT-5547	5TCC-B-V47	
C35	.33	200	R-1455	P2S8N-33		CUB2P22		PT4022	2TM-P22	
C36	.047	200	R-1463	BPD-05	DF-503	CUB3S47		PT4147	3TM-S47	
C37	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C38	22		N-9049	NPO-S1S3	TCZ-33	Z094	NPOK-330	ZT-543	5GA-Q22	
C39	.1	400		P4S8N-1	DF-104	CUB4P1		PT401	4TM-P1	
C40	.1	400		P4S8N-1	DF-104	CUB4P1		PT401	4TM-P1	
C41	3			NPO-S3	TCZ-3R3	Z007	NPOA-030	ZT-553	5TCC-B-V33	
C42	68			NPO-S168	TCZ-68	Z038	NPO-337-680		5TCC-Q68	
C43	47			S147	D6-470	TP29	GPIK-470	UC-5447	5GA-Q47	
C44	8.2		R-1441	NPO-S8.2		Z018	NPOA-8R2			
C45	10000		N-9062	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C46	10000		N-9062	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C47	10000		N-9062	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C48	15			NPO-S15	TCZ-15	TZ11	NPOK-150	ZT-5415	5TCC-Q15	
C49	1000		R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1	
C50	.22	400	R-1465	P4S8N-22		CUB4P22		PT4022	4TM-P22	
C51	10000	400	N-9062	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C52	.0033			BPD-0033	DF-502	CUB3S22	S17-03	PT4123	3TM-S22	
C53A	270			BPD-00027		G054	S1J-271	UC-5327	5GA-T27	
B	4700		YR-1459	BPD-01	YPC-350	G083	S1J-471	DC-511	5HK-S1	
C	25			BPD-000025		G026	GPIK-250	UC-5425	5GA-Q25	
C54	.047	200		BPD-05	DF-503	CUB3S47		PT4147	3TM-S47	
C55A	4700		⊲R-1458	BPD-0047	⊲PC-306	K079	S1J-0047	DC-535	5HK-D47	
B	4700			BPD-0047		K079	S1J-0047	DC-535	5HK-D47	
C56	.01	600	R-1450	BPD-01		CUD81			6TM-S1	
C57	.047	400	R-1463	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C58	.22	400	R-1466	P4S8N-22		CUB4P22		PT4022	4TM-P22	
C59	.22	400	R-1466	P4S8N-22		CUB4P22		PT4022	4TM-P22	
C60	.0033	600	R-1460	BPD-0033	D6-332	CUB3S33	GP2-333-333	PT4233	6TM-D33	
C61	.047	400	R-1463	BPD-05	DF-503	CUB3S47		PT4147	3TM-S47	
C62	.047	400	R-1463	BPD-05	DF-503	CUB3S47		PT4147	4TM-S47	
C63	22		N-9049	NPO-S1S3	TCZ-33	TZ34	NPOK-330	ZT-543	5TCC-Q22	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C84	33			N-9077	NPO-S133	TCZ-33	TZ18	NPOL-330	ZT-5433	5TCC-Q33
C85	33			N-9077	NPO-S133	TCZ-33	TZ18	NPOL-330	ZT-5433	5TCC-Q33
C86	68				NPO-S168	TCZ-68	TZ28	NPO-337-680		5TCC-Q68
C87	.033	400		R-1481	BPD-03	DF-503	CUB4S22		PT4123	4TM-S22
C88	.22	300		R-1495	P2S8N-22		CUB2P22		PT4022	2TM-P22
C89	270	500		R-1439	1465-00027	TCZ-270	SR6T27	NPO-335-271	MCB341	MB-327
C90	.01	600		R-1450	BPD-01		CUD801			6TM-S1
C91	.22	400		R-1466	P4S8N-22		CUB4P22		PT4022	4TM-P22
C92	1000	500			1464-001	DD-102	KD80	801-001	MC355	MB-101
C93	3000			N-9073	BPD-005	DD-503	KD80	811-005	DC-525	5HK-D5
C94	10000			N-9063	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1
C95	.047	400		R-1463	BPD-05	DF-503	CUB4S47		PT4147	4TM-S47
C96	.1	300			P2S8N-1	DF-104	CUB2P1		PT401	2TM-P1
C97	68	3000		R-1434		DGN0-S20				Note 1
C98	56	3000		R-1446		DD30-560		3KV-560	DC30456	20GA-Q56
C99	1000			R-1447	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1
C100	1000			R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1
C81	1000			R-1447	BPD-001	DD-103	KD69	801-001	DC-521	5HK-D1
C82	.01	600			BPD-01	DD-103	CUB801	811-01	PT501	6TM-S1

Note 1. Not used in some versions.
† Items C53A, C53B, C53C, R44A, R44B and R44C are combined in one unit.
* Items C55A, C55B, R51A and R51B are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	R-1424	F1-S		GJ-865 *	UE498	Contrast (Panel)
B	500KΩ	½		K2-41				Volume & Switch (Rear)
C	Shaft			KB-1				Attach to R1B.
R2A	500KΩ	½	R-1413	AB-59	A47-500K-S	Q31-133		Vertical Hold
B	Shaft		Not Req.	AK-19	RM-3	TQ		Attach to R2A.
R3A	3Meg	½	R-1413	AB-84	A47-3Meg-S	Q31-140	TAP355L	Height-See Note 1
B	Shaft		Not Req.	AK-19	RM-3	TQ	Not Req.	Attach to R3A.
R4A	100KΩ	½	R-1413	AB-40	A47-100K-S	Q31-138	TAP1L	Brightness
B	Shaft		Not Req.	AK-19	RM-3	TQ	Not Req.	Attach to R4A.
R5	500Ω	2	R-1451	39-500				Boat (Wire Wound)
R6	1000Ω	2	R-1410	39-1000				Vertical Linearity (Wire Wound)

Note 1. The value of this part changed to 3Meg in some versions (same part number).
* Concentrikit Equivalent; K-7 Kit, Base Bienecke and Shafts: B17-10A, P17-3G (Panel) B13-133, R1-326 (Rear) T3-1 (Switch)

RESISTORS

ITEM No.	RATING: OHMS	WATT	AIRLINE PART No.	IRC PART No.	NOTES
R7	470KΩ	½		BTS-470K	
R8	470KΩ	½		BTS-470K	
R9	680KΩ	½			
R10	10KΩ	½		BTS-10K	
R11	3300Ω	½		BTS-3300	
R12	10KΩ	½			
R13	3300Ω	½		BTS-3300	
R14	3300Ω	½		BTS-3300	
R15	3900Ω	½		BTS-3900	
R16	1000Ω	½		BTS-1000	
R17	47KΩ	½			
R18	1000Ω	½		BTS-1000	
R19	100Ω	½		BTS-100	
R20	47Ω	½		BTS-47	
R21	1000Ω	½		BTS-1000	
R22	150Ω	½		BTS-150	
R23	47Ω	½		BTS-47	
R24	470Ω	½		BTS-470	
R25	180Ω	½		BTS-180	
R26	6800Ω	½		BTS-6800	
R27	1Meg	½		BTS-1Meg	
R28	1.2Meg	½		BTS-1.2Meg	
R29	3300Ω	½		BTS-3300	
R30	2700Ω	½		BTS-2700	
R31	56KΩ	½		BTS-56K	
R32	1Meg	½		BTS-1Meg	
R33	8200Ω	½		BTS-8200	
R34	3300Ω	½		BTS-3300	
R35	100KΩ	½		BTS-100K	
R36	56KΩ	½		BTS-56K	
R37	4700Ω	½		BTS-4700	
R38	680Ω	½		BTS-680	
R39	330KΩ	½		BTS-330K	
R40	47KΩ	½		BTS-47K	
R41	4700Ω	½		BTS-4700	
R42	220Ω	½		BTA-220	
R43	150Ω	½		BTS-150	
R44A	100Ω	2		BTS-100	
B	330KΩ	½	† R-1459	BTS-330K	
C	2.2Meg	½		BTS-2.2Meg	

ITEM No.	RATING: OHMS	WATT	AIRLINE PART No.	IRC PART No.	NOTES
R45	680KΩ	½		BTS-680K	
R46	82KΩ	½		BTS-82K	
R47	680KΩ	½		BTS-680K	
R48	4700Ω	½		BTS-4700	
R49	47000Ω	½		BTS-47K	
R50	27KΩ	½		BTS-27K	
R51A	22KΩ	½	* R-1468	BTS-22K	
B	330KΩ	½		BTS-330K	
R52	330KΩ	½		BTS-330K	
R53	1Meg	½		BTS-1Meg	
R54	330KΩ	½		BTS-330K	
R55	390KΩ	½		BTS-390K	
R56	2.2Meg	½		BTS-2.2Meg	
R57	47Ω	½		BTS-47Ω	
R58	220Ω	½		BTS-220	
R59	220Ω	½		BTS-220	
R60	680Ω	½			
R61	680Ω	½			
R62	150KΩ	½			
R63	560KΩ	½			
R64	180KΩ	½			
R65	2.7MEg	½			
R66	68KΩ	½			
R67	8200Ω	½			
R68	150KΩ	½			
R69	100KΩ	½			
R70	47KΩ	½			
R71	39KΩ	2		BTS-39K	
R72	10KΩ	½			
R73	47Ω	½			
R74	150KΩ	½			
R75	1000Ω	1	N-5356		
R76	2.7Ω	5	R-1434	BW-2.7	
R77	10Ω	2		BTB-100	
R78	8.5Ω	3.5	R-1528		
R79	8.5Ω	5	R-1409		
R80	220KΩ	½		BTS-220K	

† Items R44A, R44B, R44C, C53A, C53B, C53C are combined in one unit.
* Items R51A, R51B, C55A, C55B are combined in one unit.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Hellderson PART No.	Merit PART No.	RCA TYPE No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Osc. Trans.	R-1425	B6702①	A-3003①	209T1 ①	V405 ①	A-8125①	26A03 ①	A-97X①
T2	Horiz. Output Trans.	R-1417							
T3	Vert. Output Trans.	R-1418	21900②	A-2822		V314 ①		26S71	
T4A	Yoke-Horiz. (DAMP)	R-1421	DP500③	MDF-73	322D①④	V70F30/43	DY-UA④	Y-10④⑤	Y-19-1
B	Vert. (46MH)	R-1404 ③	⑤	④⑤	⑤	④⑤			④⑤

① Drill new mounting hole(s).
② Use 6 to 1 turns ratio.
③ Yoke rear cover and centering device.
④ Use original rear cover and centering device.
⑤ Connect horizontal damping network across terminals #3 and #7. Use original network if necessary.
⑥ Remove damping capacitor from terminals #1 and #2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	Hellderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	3KΩ	4Ω	R-1419	Z101 ①	A-3025 ①	A-3337 ①	26S58	S-12X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No.	RCA TYPE No	NOTES
SP1	4"	PM	4Ω	R-1526	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Matching Trans.	0Ω	0Ω	31T-413				
L2	Ant Matching Trans.	0Ω	0Ω	31T-413				
L3	Ant. Shunt Coil	.3Ω		31T-416				
L4	FM Trap	0Ω		31T-418				
L5A	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-302B				Channel 2
B	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-303B				Channel 3
C	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-304B				Channel 4
D	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-305B				Channel 5
E	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-306B				Channel 6
F	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-307B				Channel 7
G	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-308B				Channel 8
H	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-309B				Channel 9
I	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-310B				Channel 10
J	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-311B				Channel 11
K	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-312B				Channel 12
L	Ant., RF, Mixer Grid, Osc. Coils	0Ω		31M-313B				Channel 13
L6	Conv. Plate	.1Ω		TBS-613				
L7	RF Choke	0Ω		R-1870	19-1001		4804	1.4 Microbarries-Note 1
L8	1st Video IF	.1Ω		R-1433			6321 *	Includes Trap
L9	RF Coil	3.7Ω		R-1431	19-8053 ■		4684 ■	Includes 4.7KΩ resistor-Note 1
L10	2nd Video IF	.1Ω	.1Ω	R-1446	17-4523	TV-130	6319	
L11	Fil. Choke	0Ω		R-1472	19-1001		4804	1.4 Microbarries
L12	3rd Video IF	.1Ω	.1Ω	R-1446	17-4523	TV-130	6319	
L13	Fil. Choke	0Ω		N-9235	19-1001		4804	1.4 Microbarries
L14	4th Video IF	0Ω	0Ω	R-1437	17-4523	TV-130	6319	
L15	Series Peaking Coil	4.4Ω		R-1439	19-1006		4812	11.7 Microbarries
L16	Series Peaking Coil	5.8Ω		R-1470	19-3062	TV-151	6377	80 Microbarries
L17	Series Peaking Coil	12.5Ω		R-1440	19-3300 ▲		6155 ▲	394 Microbarries; Wound on 2.2KΩ resistor
L18	4.5MC Trap	3.5Ω		N-9011	20-1004	TV-181	1462	
L19	Shunt Peaking Coil	14Ω		R-1471	19-6400 ●		6134 ●	380 Microbarries; Wound on 1.5KΩ resistor
L20	1st Sound IF	1.1Ω		R-1838	20-1004	TV-181	1462	
L21	2nd Sound IF	2.8Ω		R-1430				Tapped ⊕ .4Ω & 1.8Ω
L22	Quadrature Coil	5.5Ω		R-1407	20-1004	TV-151	1460	

Note 1. Not used in versions with UHF.
* Use one winding only.
■ Parallel with 4.7KΩ resistor.
● Parallel with 8.2KΩ resistor.
▲ Parallel with 1.5KΩ resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Rem PART No.	Thordarson PART No.	NOTES
L23	52Ω	58Ω	R-1406							Horiz. Osc. Horiz. Waveshaping Coil
L24	68Ω		R-1408							

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~(½)	REPLACEMENT DATA: AIRLINE PART No.	Hellderson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L25	.270ADC	16.3Ω	18H	R-1406	C-5057	C-2998	C-2328	26C44 ①	C-17X

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No	RATING: CURRENT	REPLACEMENT DATA: AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.270ADC	R-1422	1338A	MR300	6S350	5QS1	359A	

PROPER
L. F. BLANKEN
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[illegible] COLORADO

AIRLINE MODELS GSL-4013A, -4014A, -4015A, -4018A, GSL-4113A, -4114A, -4115A, -4118A

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		AIRLINE PART No.	SYLVANIA PART No.	
M2	1N64	1N64	1N60 or 1N132	Video Det.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuner	R-1423	VHF - Models GSL-4013A, GSL-4014A, GSL-4015A
M4	Tuner	R-1623	VHF-UHF - Models GSL-4113A, GSL-4114A, GSL-4115A
M5	Centering Device	R-1404	Includes deflection yoke (T4) rear cover
M6	Ion Trap	R-1426	
	Cabinet	518	Models GSL-4013A, GSL-4113A
	Cabinet	529	Model GSL-4014A
	Cabinet	523	Model GSL-4114A
	Cabinet	555	Models GSL-4015A, GSL-4115A
	Cabinet	527	Models GSL-4018A, GSL-4118A
	Knob	R-1517	VHF channel selector - Models GSL-4013A, GSL-4014A
	Knob	R-1905	VHF channel selector - Model GSL-4015A
	Knob	R-1627	VHF channel selector - Models GSL-4113A, GSL-4114A
	Knob	R-1902	VHF channel selector - Model GSL-4115A
	Knob	R-1628	UHF channel selector - Models GSL-4113A, GSL-4114A
	Knob	R-1903	UHF channel selector - Model GSL-4115A
	Knob	R-1518	On-off-volume - Models GSL-4013A, GSL-4014A
	Knob	R-1906	On-off-volume - Model GSL-4015A
	Knob	R-1624	On-off-volume - Models GSL-4113A, GSL-4114A
	Knob	R-1899	On-off-volume - Model GSL-4115A
	Knob	R-1519	Contrast - Models GSL-4013A, GSL-4014A
	Knob	R-1907	Contrast - Model GSL-4015A
	Knob	R-1625	Contrast - Models GSL-4114A, GSL-4113A
	Knob	R-1900	Contrast - Model GSL-4115A
	Knob	R-1520	VHF fine tuning - Models GSL-4013A, GSL-4014A
	Knob	R-1908	VHF fine tuning - Model GSL-4015A
	Knob	R-1626	VHF fine tuning - Models GSL-4113A, GSL-4114A
	Knob	R-1901	VHF fine tuning - Model GSL-4115A
	Safety Glass	R-1491	Models GSL-4013A, GSL-4113A, GSL-4015A, GSL-4115A
	Safety Glass	R-1613	Models GSL-4014A, GSL-4114A
	Mask	R-1556	Models GSL-4013A, GSL-4113A, GSL-4015A, GSL-4115A
	Mask	R-1608	Models GSL- 4014A, GSL-4114A
	Mask	R-1662	Models GSL-4018A, GSL-4118A

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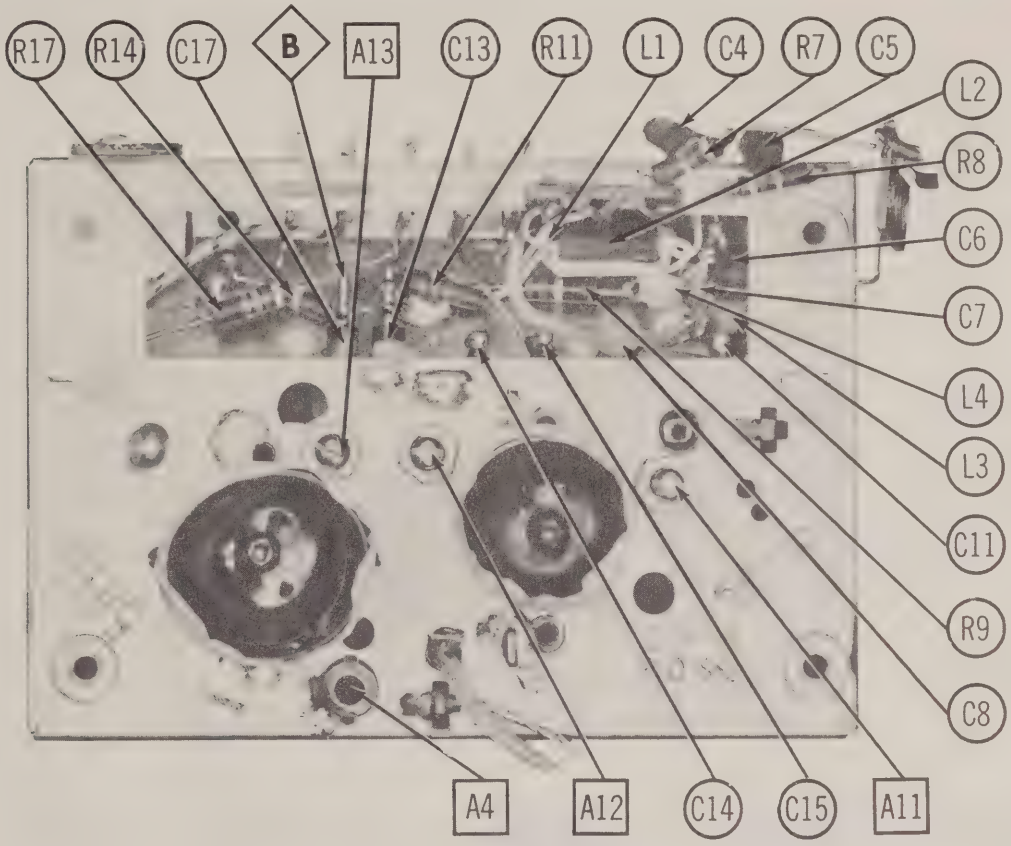
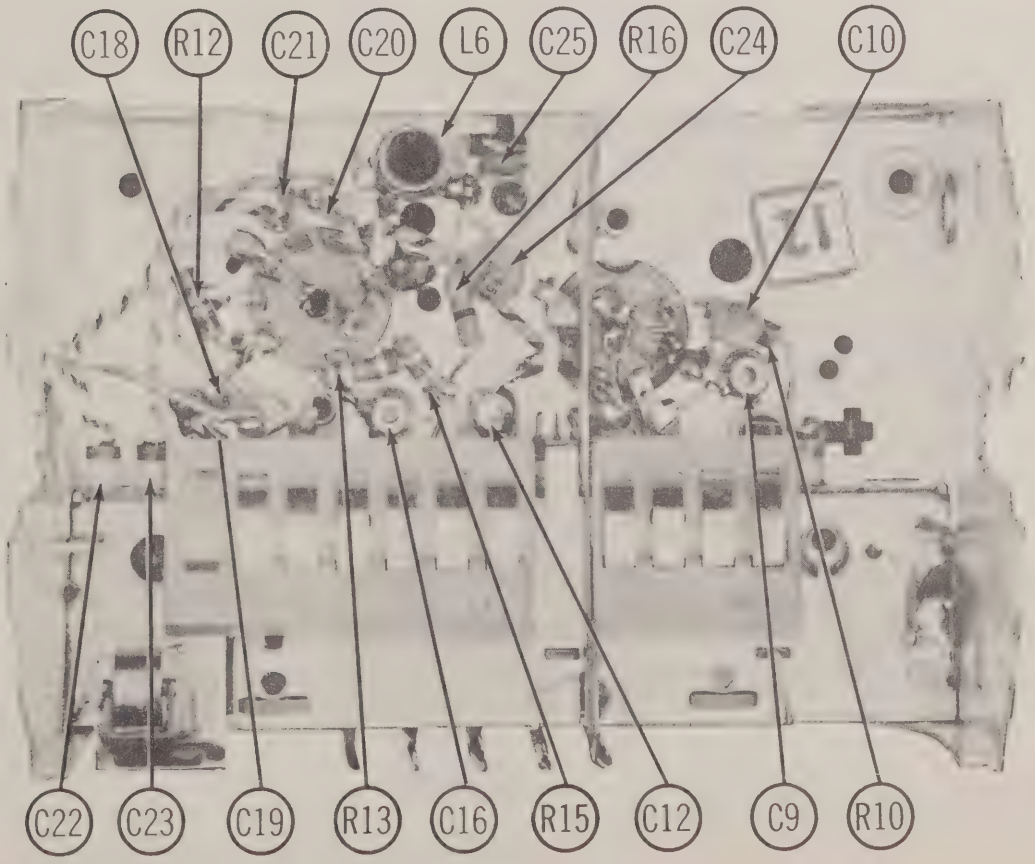


RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

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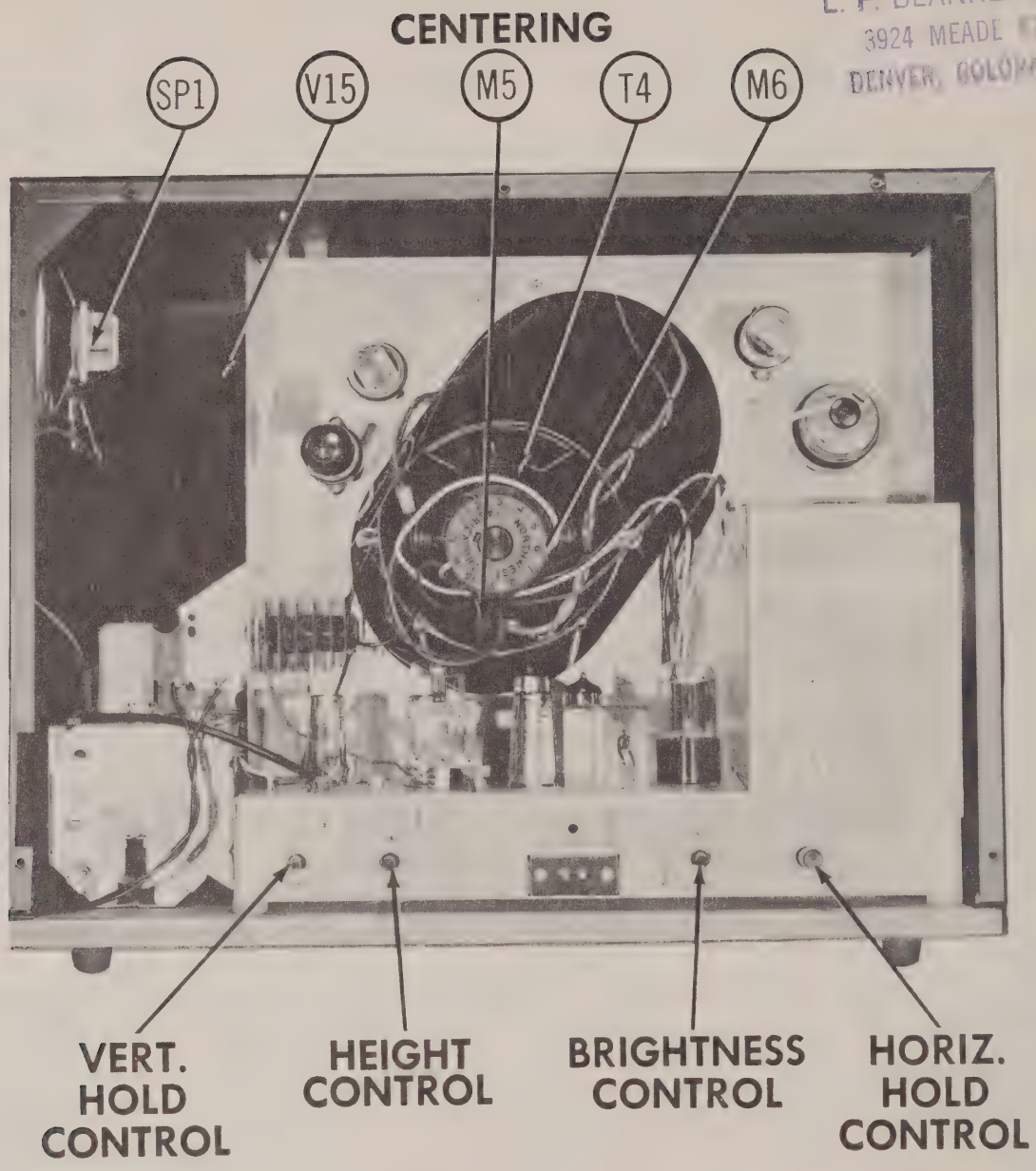

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal hold control slug (located on rear control panel of chassis) fully counter clockwise, then clockwise until the picture synchronizes horizontally.

2. Connect the vertical amplifier of the oscilloscope thru a low capacity probe to junction of L23, L24, R70 and C70. Low side to chassis. Adjust the wave shaping slug (B1) until waveform similar to Fig. 6 is obtained. If necessary during adjustment of B1, adjust the horizontal hold control slug to keep picture in sync.

3. Remove scope from junction of L23, L24, R70, C70 and chassis.

4. Switch off channel and back again, if picture fails to lock in sync slightly readjust the horizontal hold control slug.

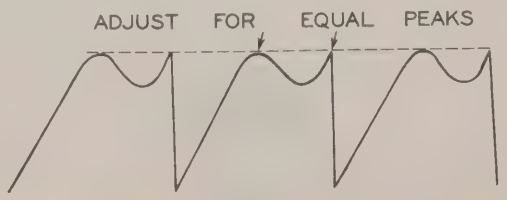

FIG. 6

AIRLINE MODEL 55GAA-2501A

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AIRLINE MODEL 55GAA-2501A

AIRLINE MODEL 55GAA-2501A

TRADE NAME	Airline Model 55GAA-2501A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp.-Phase Inv., (2) 35L6GT Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .28 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE SIMILAR V-M MODEL 950-PHOTOFACT SET 216 - FOLDER 11 OR RECORD CHANGER MANUAL CM-5.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

AIRLINE
Model 55GAA-2501A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	AF Amplifier-Phase Inv.	12AX7	12AX7	9A	
V2	Output	35L6GT	35L6GT	7AC	
V3	Output	35L6GT	35L6GT	7AC	
V4	Rectifier	35Z5GT	35Z5GT	6AD	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V-404020	BBRT44215	TCT3116	TDL-404020-150	FMT-315	TVA-3451
B	40	150							
C	20	150							
D	20	25	(Note 1)						

Note 1. Section C1D is not used.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.1	200		P288-1	DF-104	CUB2P1	811-501	PT401	2TM-P1	
C3	500	500		SI500	D6-502	5W5T5		MC245	1FM-35	
C4	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C5	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C6	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C7	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C8	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

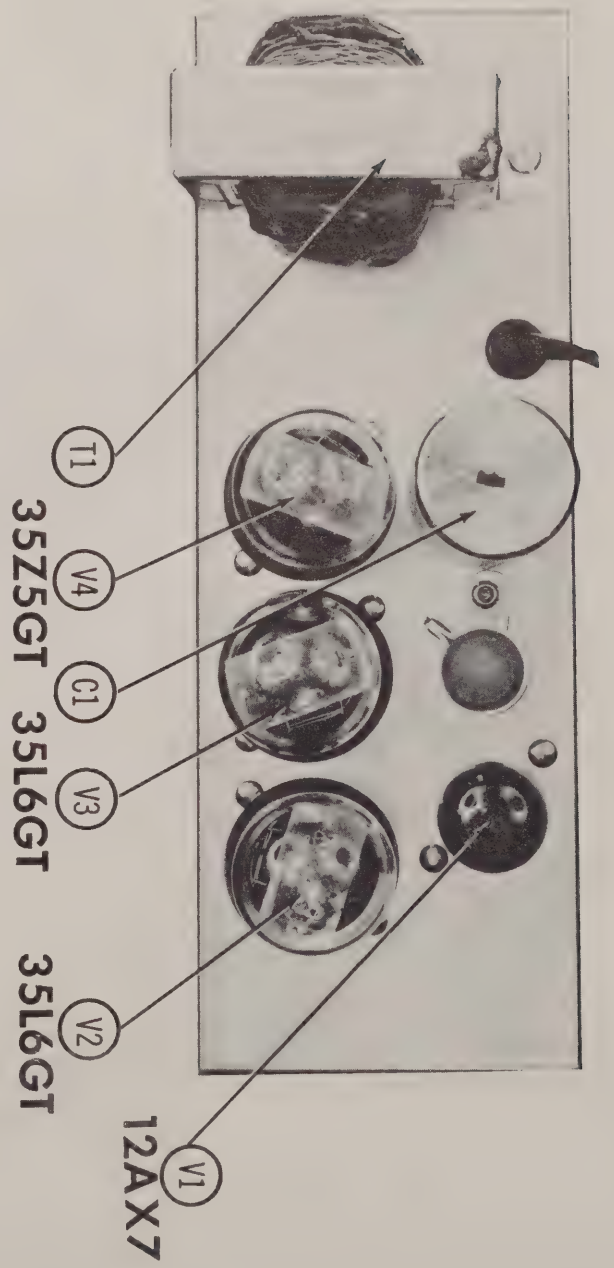
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2.5Meg	½		ABT-79				Volume - tap @375KΩ
B	Shaft			AK-4				Attach to R1A
R2A	7000Ω	½		AB-15	A47-10K-Z	Q13-116	U-18	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	270KΩ	½		BTS-270K	
R4	22KΩ	½		BTS-22K	
R5	270KΩ	½		BTS-270K	
R6	4700Ω	½		BTS-4700	
R7	47KΩ	½		BTS-47K	
R8	270KΩ	½		BTS-270K	
R9	10KΩ	½		BTS-10K	
R10	470KΩ	½		BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R11	82Ω	2			
R12	470KΩ	½		BTS-470K	
R13	10KΩ	½		BTS-10K	
R14	56Ω	2			
R15	22Ω	1			
R16	100Ω	2			
R17	10KΩ	½		BTS-10K	
R18	600Ω	10		1 3/4A-600	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.3KΩ CT	1.5Ω	1208	Z1011 ①	A-2902 ①	A-3870①	26S59②	S-55X ①	① Mount same as orig. unit ② Use 3.5Ω tap on secondary

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	RCA TYPE No.	
SP1	6"	PM	3Ω	2615	6A21	224S1	
SP2	6"	PM	3Ω	2615	6A21	224S1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	AIRLINE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		55-T	GD-J	47	0-1 or S-1 & 0-3	

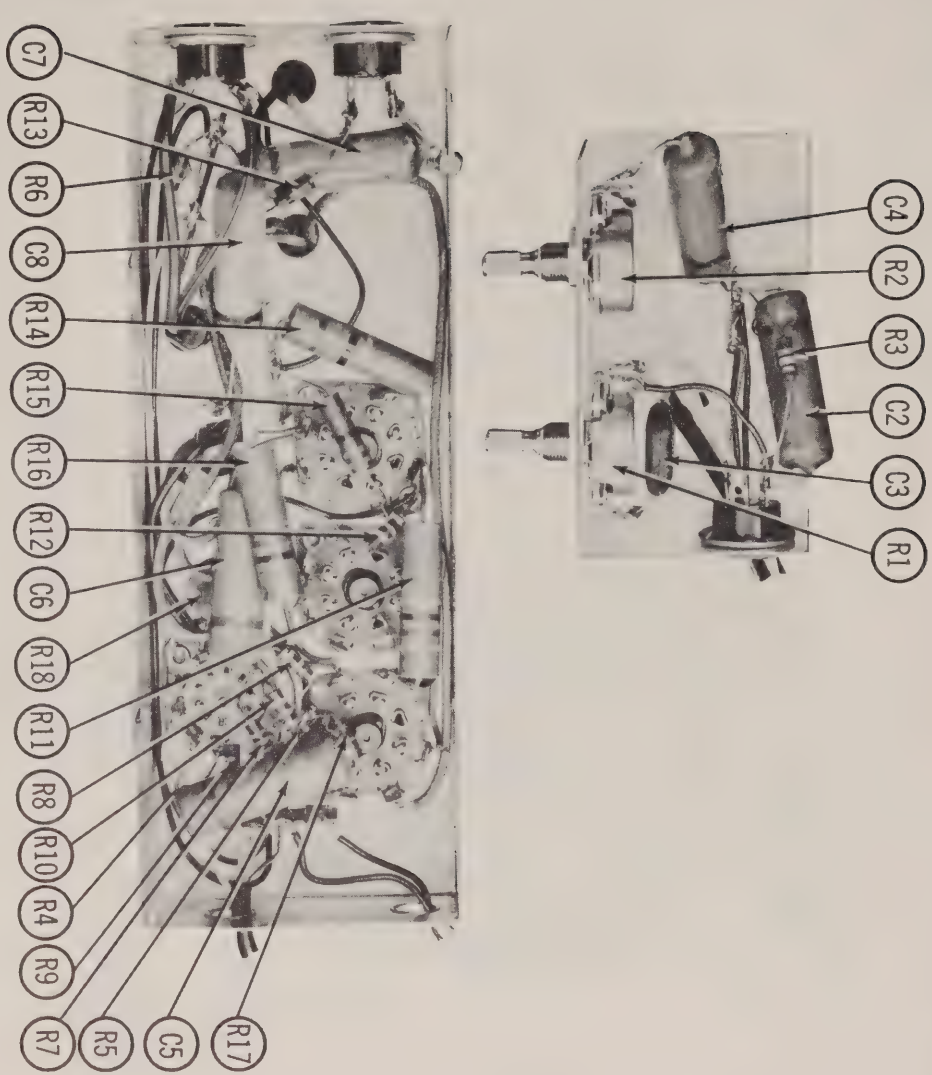
ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

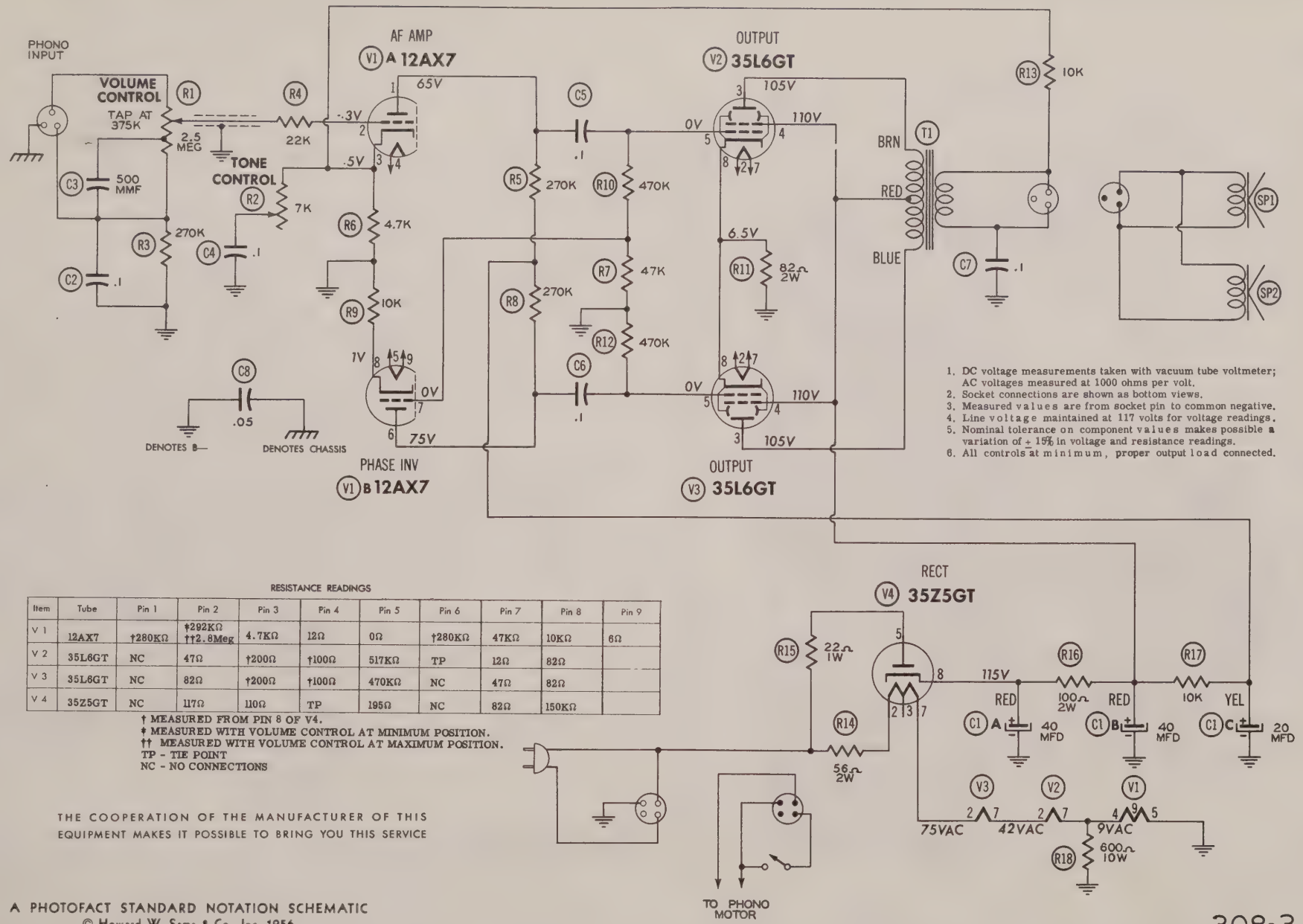
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	AIRLINE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		*S-67 or †S-66 or ♦†S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



AIRLINE Model 55GAA-250IA



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†280KΩ	‡292KΩ ††2.8Meg	4.7KΩ	12Ω	0Ω	†280KΩ	47KΩ	10KΩ	6Ω
V 2	35L6GT	NC	47Ω	†200Ω	†100Ω	517KΩ	TP	12Ω	82Ω	
V 3	35L6GT	NC	82Ω	†200Ω	†100Ω	470KΩ	NC	47Ω	82Ω	
V 4	35Z5GT	NC	117Ω	110Ω	TP	195Ω	NC	82Ω	150KΩ	

† MEASURED FROM PIN 8 OF V4.
‡ MEASURED WITH VOLUME CONTROL AT MINIMUM POSITION.
†† MEASURED WITH VOLUME CONTROL AT MAXIMUM POSITION.
TP - TIE POINT
NC - NO CONNECTIONS

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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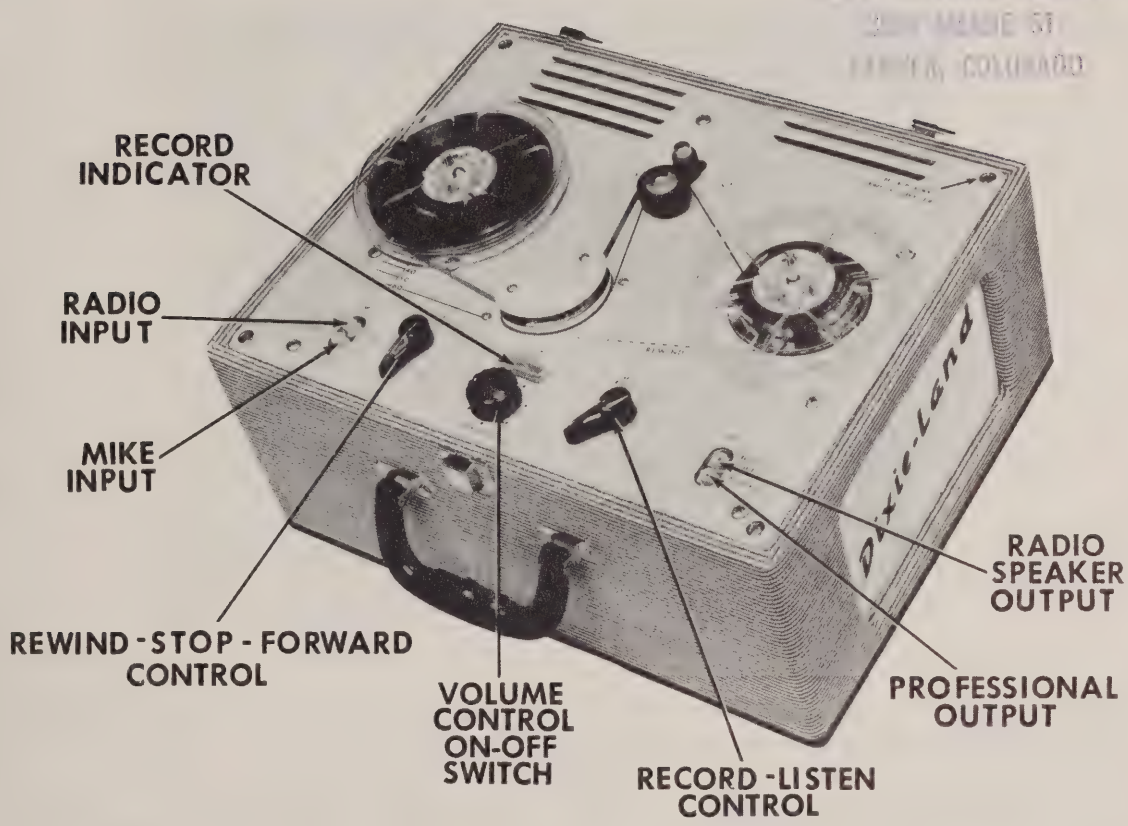

DIXIE-LAND
MODEL 110

GENERAL INFORMATION

The Dixie-Land Model 110 Tape Recorder is designed to record and play back two tracks of material on standard width recording tape, which doubles the playing time with no loss of frequency response or quality. Recordings can be made from a radio, television receiver or phonograph, in addition to those made directly from the microphone. Recordings can be played back through the self-contained speaker, external speaker or through a high fidelity amplifier system.

Using both channels of the tape, the recording time is as follows:

Reel Size	Speed 3 3/4	Speed 7 1/2
5"	1 hour	1/2 hour
7"	2 hours	1 hour

Connect this recorder only to an outlet supplying 117 volts, 60 cycle, AC supply.

Manufactured by:

Tape Recorders, Inc.
1501 West Congress Street
Chicago 7, Illinois

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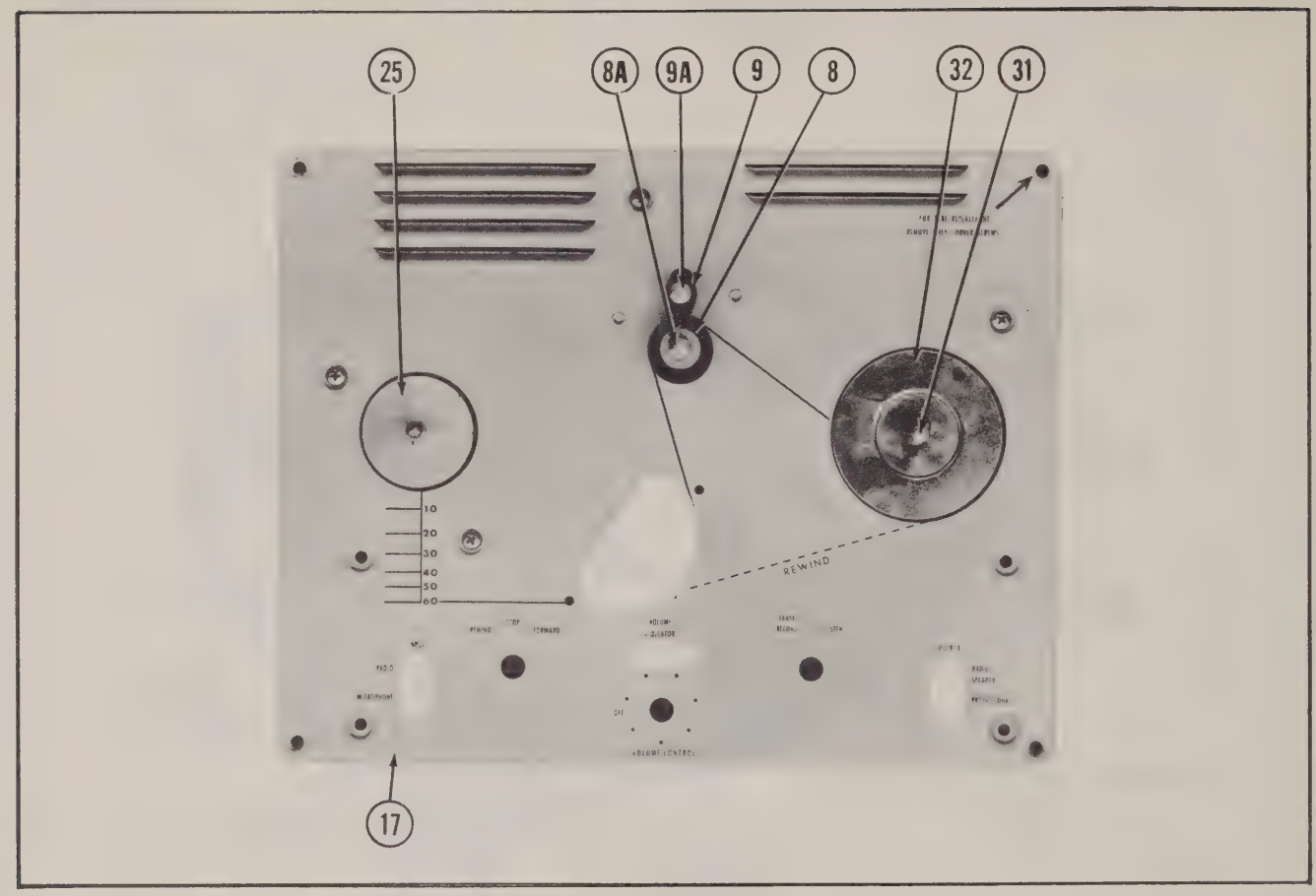


Figure 2

OPERATING CONTROLS

To Start-

Turn volume control knob (10) clockwise.

Volume-

Degree of rotation of volume control knob (10) determines volume of recording and playback.

Tape Travel-

Rewind-Stop-Forward control knob (1) controls direction of tape travel. Always return this knob to "Stop" position before turning unit off.

Record-Listen-

Record-Listen control knob (11) controls amplifier and record playback head. To prevent accidental erasure, place in "Listen" position immediately after recording is completed.

OPERATING INSTRUCTIONS

1. Insert the AC power cord into the receptacle on the rear of the case.

2. Plug the AC cord into a convenient wall receptacle of the proper rating.

Threading The Tape-

1. Place a reel of tape (either 5" or 7") on the left spindle (25) and an empty reel on the right spindle (32) making sure the reel slots engage the reel pin on the spindle.

2. Thread the tape by following the solid printed line on the top panel (Figure 2).

NOTE: This recorder uses type "A" wound tape, i. e. the dull magnetic coated side faces inward on the reel. If the tape used is type "B" (coated side facing outward) the recording will be made at a very low sound level and the playback will be almost inaudible.

3. Insert the free end of the tape through to the hub of the right reel and place a pencil firmly over the tape , forcing it into one of the three radial slots. Turn the reel several turns (counterclockwise) with the pencil in this position until the tape is secured to the reel and all slack is taken up between reels.

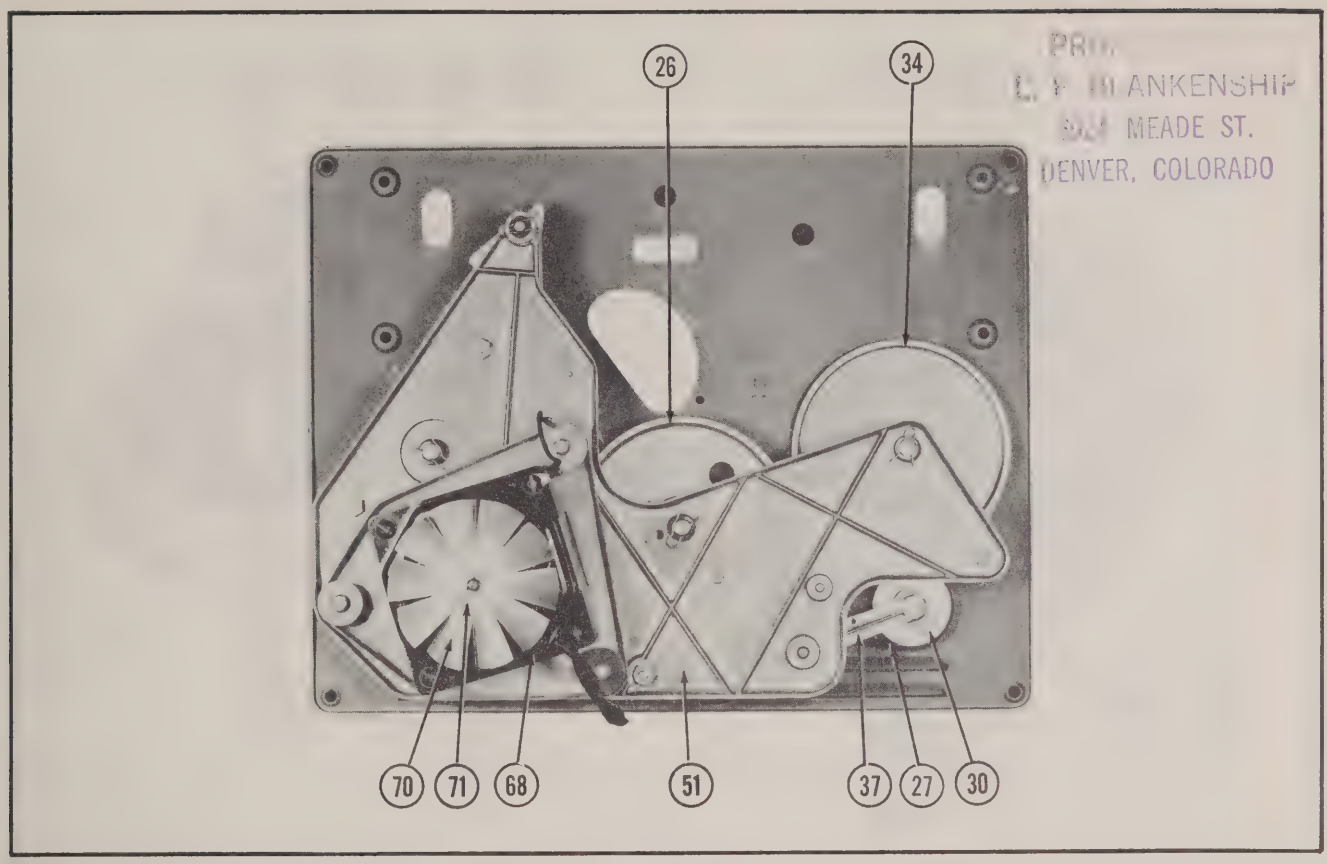
To Record From Microphone-

1. Turn the volume control knob (10) to the right until a click is heard and allow about thirty seconds for the tubes to warm up.

2. Insert microphone plug into input socket labeled "Microphone".

3. Turn record-listen knob (11) to "Record" position. When in this position, all material already on the tape will be erased before a new recording is made .

4. While talking into the microphone, adjust the volume control until the neon indicator light flashes .



PRIN
C. P. MANKENSHIP
[illegible] MEADE ST.
DENVER, COLORADO

Figure 3

NOTE: Correct recording volume is very important. Too weak a signal, which does not cause the neon indicator to flash, will result in weak playback and high background noise. Too strong a signal, causing the indicator to flash constantly, will result in distortion during playback.

5. Turn the rewind-stop-forward control knob (1) to "Forward" position. The tape is now moving and any sound entering the microphone will be recorded on the tape.

To Record From Radio-

Recordings can be made from a radio by placing the microphone near the loud-speaker of the radio; however, this type of recording may not be satisfactory as other sounds may be picked up by the microphone which as a result will be recorded on the tape. A superior quality recording can be made by use of a radio-phono attachment cord. Connect attachment cord as follows:

1. Connect the cord clips across the voice coil terminals on the radio speaker.

2. Insert the attachment cord plug into the input socket labeled "Radio".

3. Proceed as described in "To Record From Microphone".

NOTE: To play back through the radio speaker remove the radio-phono attachment cord from the input jack and plug it into the output jack.

To Change Speeds-

The conversion to 7 1/2 inches per second from 3 3/4 inches per second speed is accomplished in the following manner.

1. Remove the thumb screw (8A) on the capstan shaft, remove the tape drive small (9).

2. Remove the thumb screw (9A) on the pressure roller shaft, remove the tape drive large (8).

3. Interchange the two rollers by placing the tape drive large (8) on the capstan shaft and place the tape drive small (9) on the pressure shaft. The recorder will then be ready for the speed of 7 1/2 inches per second.

4. To change back to 3 3/4 inches per second reverse the above procedure.

NOTE: When the big roller is on the capstan, the recorder is ready to play 7 1/2 inches per second. Be sure that the thumb screw is tight, if thumb screw is not in place, variable speeds will result.

To Record From Phonograph-

1. Connect the cord clips of the attachment cord to the pickup leads on the phonograph.

2. Insert the attachment cord plug into the input socket labeled "Radio".

3. Proceed as described in "To Record From Microphone".

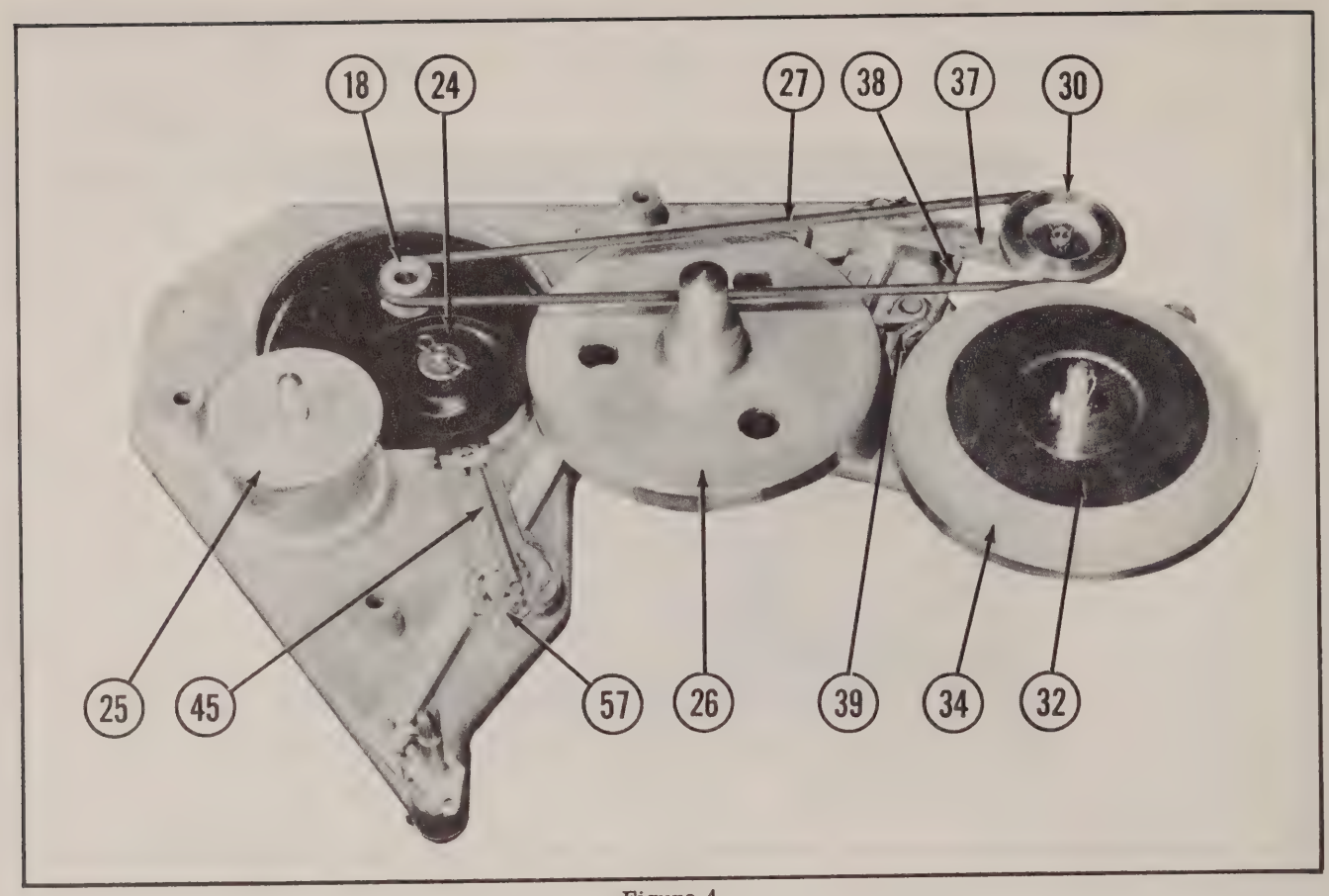


Figure 4

NOTE: Should a hum develop from the above connection, reverse the cord clips on the pickup leads.

To Record From Television Receiver-

1. Connect attachment cord as described in "To Record From Radio" and proceed with recording as described in "To Record From Microphone".

Dual Track Recording-

This recorder is designed so that 1/2 the tape width is recorded at a time; thereby resulting in two track recordings. This two track operation is accomplished in the following manner:

1. After a reel of tape has been recorded; i.e., all the tape wound on the right reel, place the rewind-stop-forward control knob (1) in the "Stop" position. This stops all movement of the tape.

2. Remove the reels from the recorder, turning the full reel over and placing it on the left spindle.

3. Properly thread the tape and proceed with the recording.

4. After the second track has been recorded the first track of recording is ready to be played, without rewinding, by reversing the reels as described in Step No. 2 above.

To Rewind-

1. With the volume control knob (10) turned on, turn the record-listen control knob (11) to "Listen".

2. Turn the rewind-forward control knob (1) to "Rewind" position. As the tape is rewinding you will hear the recording played backwards at a high rate of speed. When this sound stops, you have come to the start of the recording. To rewind a full reel of tape remove the tape from between the pressure roller (9) and capstan so the tape will rewind directly across the recorder to the left-hand reel; it will just touch the bottom of the recording head. This method is faster when rewinding an entire reel and reduces recording head wear.

To Play A Recording-

1. Thread the tape as described under "Threading The Tape".

2. Turn the On-Off-Volume control knob (10) on and allow approximately thirty seconds for the tubes to warm up.

3. Place the record-listen control knob (11) in the "Listen" position.

4. Place the rewind-stop-forward control knob (1) in the "Forward" position and adjust the volume control for desired level.

To Use An External Speaker-

Any size speaker of the permanent magnet type, having a 3.2Ω voice coil, may be used by connecting the attachment cord across the voice coil terminals of the speaker and then inserting the plug into the output socket labeled "Radio Speaker".

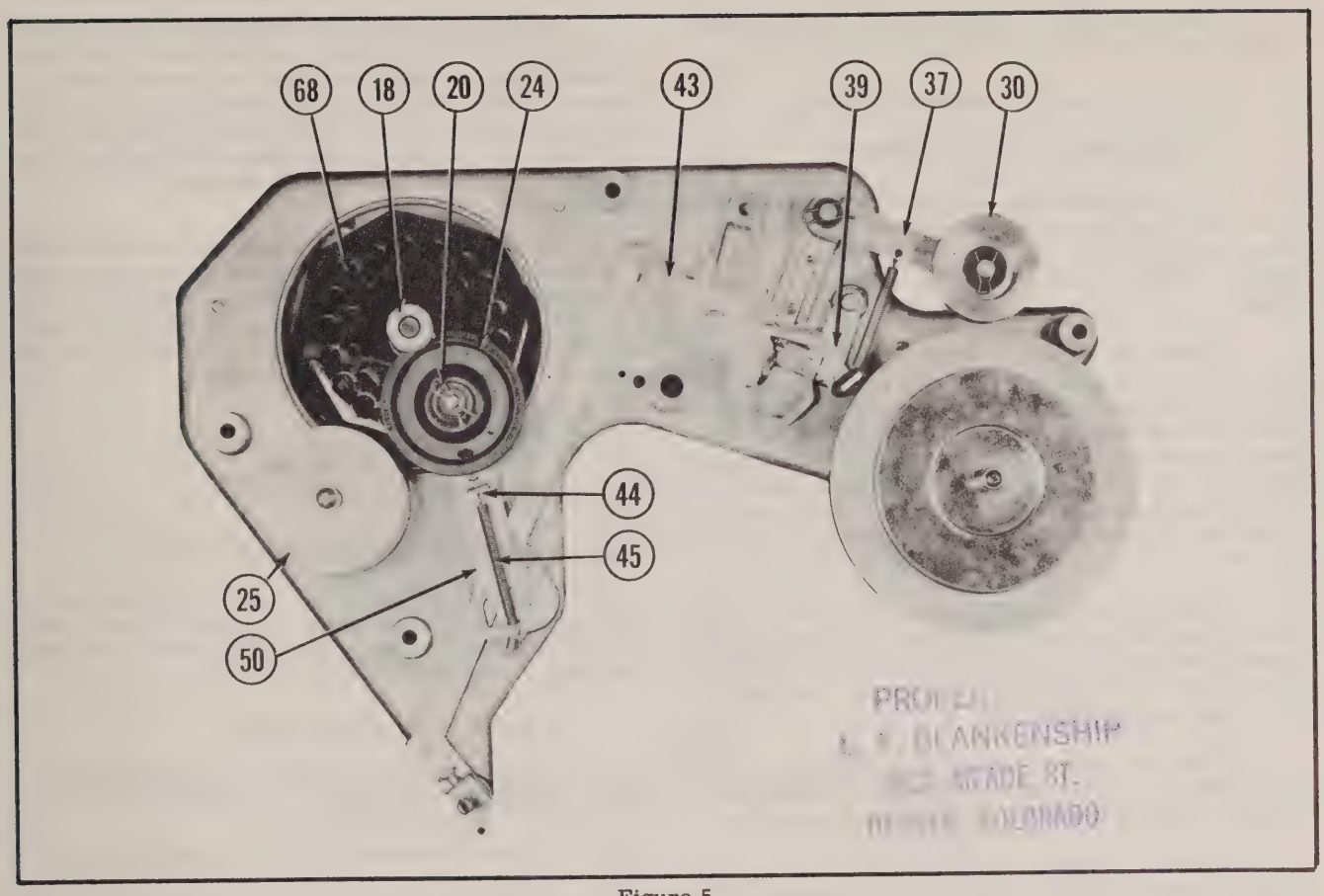


Figure 5

To Edit And Splice Tape-

NOTE: Since it is impossible to edit and splice one track without affecting the other, recordings which are to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions, or by joining selection into another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use.

2. For best results, cut tape at a slight diagonal, join ends together with splicing tape on the glossy side and trim off any excess width.

Erasing Recorded Material-

It is not necessary to first erase a recorded tape if the same tape is to be used for a new recording. Erasing of recorded material takes place automatically when new material is recorded. If it is desired only to erase a tape, set the machine for recording without having the microphone or attachment cord connected to input jack.

DISASSEMBLY INSTRUCTIONS

To remove the recorder from its cabinet, remove the four phillips head screws (13) from the corners of the top panel (17). Insert a thin-blade screwdriver between the panel and the cabinet and pry upwards enough to slip the finger under the panel. Lift up enough to permit the speaker plug and AC leads, etc., to be disconnected. The recorder can now be removed complete.

In handling the recorder out of its cabinet, care must be taken to avoid damage to the motor fan (70) and the motor shaft. When replacing the recorder, check to be sure the speaker leads and AC leads will not be pinched or will not interfere with the recorder mechanism.

INSPECTION OF COMPLETE RECORDER

1. Visually inspect the alignment of the cam on the "Forward-Stop-Rewind" shaft. The cam should close the erase interlock switch when in the "Forward" position.

2. Move the tape through the machine, first in the forward direction and then in the rewind direction. The tape should pass midway between the flanges of the reel which is receiving the tape. Change shims under the recording head, if necessary, to achieve this.

3. With the recorder out of the cabinet and the motor running, orient the power transformer of minimum audible hum from the speaker. Tighten the four transformer mounting screws.

4. When placing the recorder in the cabinet, check for bent fan and for paths of speaker leads, motor leads and AC leads which will not interfere with any moving part of the mechanism.

5. Using plastic base type, make microphone voice recordings at various volume control settings, including a recording of loud talking close to the mike with the volume control at maximum gain. Upon playback, the best recording should be that made with the neon bulb flashing only on the louder syllables. Erase the portion of tape having overloaded recording. No trace of the recording should remain.

6. Make a music recording from a disc or other source. Play back and listen for over-all quality.

7. Check for easy operations of controls.

MECHANICAL DRIVE ASSEMBLY

1. With the rewind-stop-forward control knob (1) in the "Stop" position, idler wheel (24) should be in a neutral position; that is, there should be a clearance of 1/32" between the motor shaft and the idler wheel.

2. With control knob (1) in the "Rewind" position, idler wheel (24) is pivoted against the rewind drum (25) and the motor shaft. This accounts for the fast rewind speed. Make a check, by turning the rewind drum (25) counterclockwise, to see if these parts contact each other properly. The idler wheel should turn the motor shaft. If this does not occur, check for binding parts, oil on the friction surfaces, or looseness of springs (45 and 57).

3. When control knob (1) is in the "Forward" position, idler (24) is pivoted against the flywheel and capstan (26) and the "O" ring belt (27), which is driven by the motor belt pulley (18), is pivoted against the rim of the take-up drum (34).

4. With the motor running and control knob (1) in the "Stop" position there should be at least 1/32" clearance between belt (27) and take-up drum (34).

5. With the motor running and control knob (1) in "Stop" position observe belt (27). The same portion of the belt surface should run in the pulley grooves at all times, that, the belt should not rotate above the center of a cross section. If such rotation does occur, belt pulley (19) is not correctly located.

6. Check end play of rewind drum (25), flywheel (26) and take-up drum (34). Each should have some end play, not more than 1/32". Correct assembly of washers on these shafts should control this.

7. With control knob (1) in "Rewind" position, there should be at least 1/32" clearance between the rubber on the brake (39) and the take-up drum (34). With the motor running, move the control knob slowly from "Rewind" to "Stop". Meanwhile, rotate the take-up drum (34) manually. The brake should rotate the take-up drum before the rewind drum stops rotating. Bend the brake arm to meet these requirements.

8. Place a full 5" reel of tape on the take-up spindle (32) and run the machine in the "Forward" position. Measure the tension required to hold the tape reel stationary. This tension should be 1 to 2 ounces.

NOTE: This tension should be measured after the machine has been running with the clutch slipping for at least one minute. The tension is controlled by the type and amount of lubricant used on the felt washer.

9. Using a 7 inch reel of tape and an empty 7 inch reel, thread the tape as for playing and observe the passage of the tape between the reel flanges on forward drive and on rewind. The tape should be centered between the reel flanges, and the clearance between reel flanges and top plate should be ample without having interference around the entire reel perimeter, it will be necessary to replace defective parts.

10. When threaded as for playing, and when powered by 115 volts 60 cycles, the unit should start rewinding when switched from "Off" to "Rewind" with an almost full 7 inch reel on the rewind drum and only a dozen or so turns of tape on the take-up reel. Failure to start may be due to weak motor or friction in the bearings of the capstan or take-up drum.

11. Check functioning of pressure roller by holding clutch plate on take-up drum and letting tape run through capstan. If tape does not run through smoothly, check to see if pressure roller surface is clean. The shaft should be well oiled. The pressure roller in contact should be flush up against the capstan.

TROUBLES

Take-Up Drum And Capstan Speed Irregular-

1. Grease or oil on the rubber drive surface of idler wheel (24), motor shaft, pressure roller (9) "O" belt (27) and take-up drum (34). Clean these parts with Naptha.

2. Motor belt pulley (18) loose.

Tape Overruns When Control Is Turned From "Rewind" To "Stop" Position-

1. Brake assembly (39) not adjusted properly.

See "Mechanical Drive Assembly #7".

Tape Will Not Rewind-

1. Spring (45 and 57) loose.

Failure To Erase-

1. Check head windings for open or shorted coils.
2. Check playing surfaces for dirt or other foreign material which would prevent close contact of the tape to the erase head surface.

3. Check position of head to be sure the tape is running over correct surfaces.

4. Check the head for excessive wear of the erase head surface.

5. Check the operation of the erase interlock switch.

Faulty Play-Back-

1. Same as above.

2. Check amplifier circuits, tubes, etc.

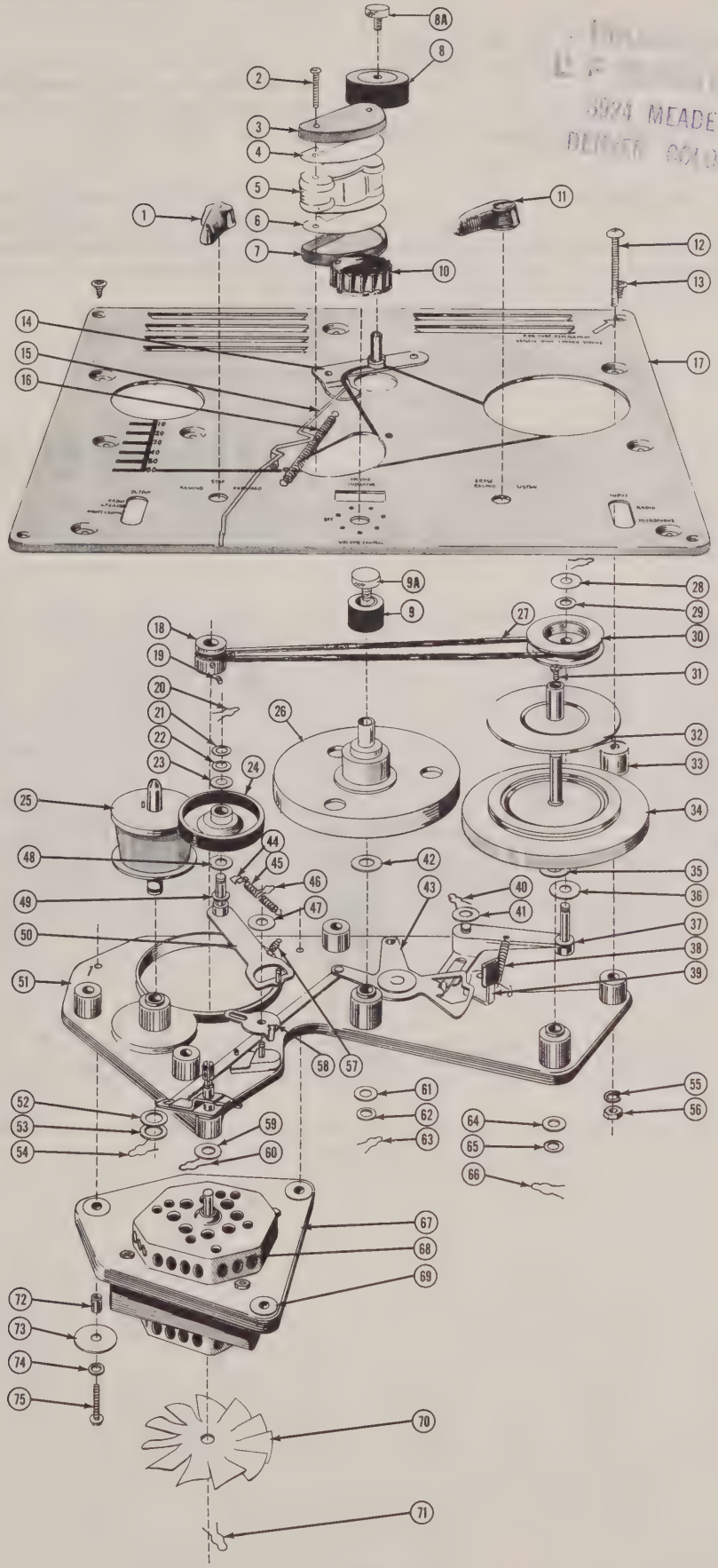
Wows-

1. Check capstan (26) for excessive run-out.

2. Check idler (24) for worn or uneven surface.

3. Check for low line voltage.

4. Check for sticky tape or foreign material on the pick-up surface.



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5. Check the tape width and be sure that it is not binding in the guides.

6. Check for distorted reels or any other friction which might cause an excessive load on the motor or drive assembly.

7. Check pressure roller (9) for signs of foreign matter or excessive wear.

LUBRICATION

Extreme care should be taken when lubricating the mechanism. For satisfactory operation, the instructions in this section should be followed.

1. Mechanical linkages should be lubricated lightly at points of friction with Sta-Put No. 18-H.

2. The shafts of rotating parts, when replaced should be wiped clean with a lint-free cloth or paper and oiled lightly with Kensington No. 9 Spindle Oil. Use two or three drops.

3. When lubricating the felt washers on the take-up and rewind drum, use Sta-Put Oil No. 360 Saturate the felt washers and then remove as much of the oil as possible by pressing a cloth or absorbent paper against them.

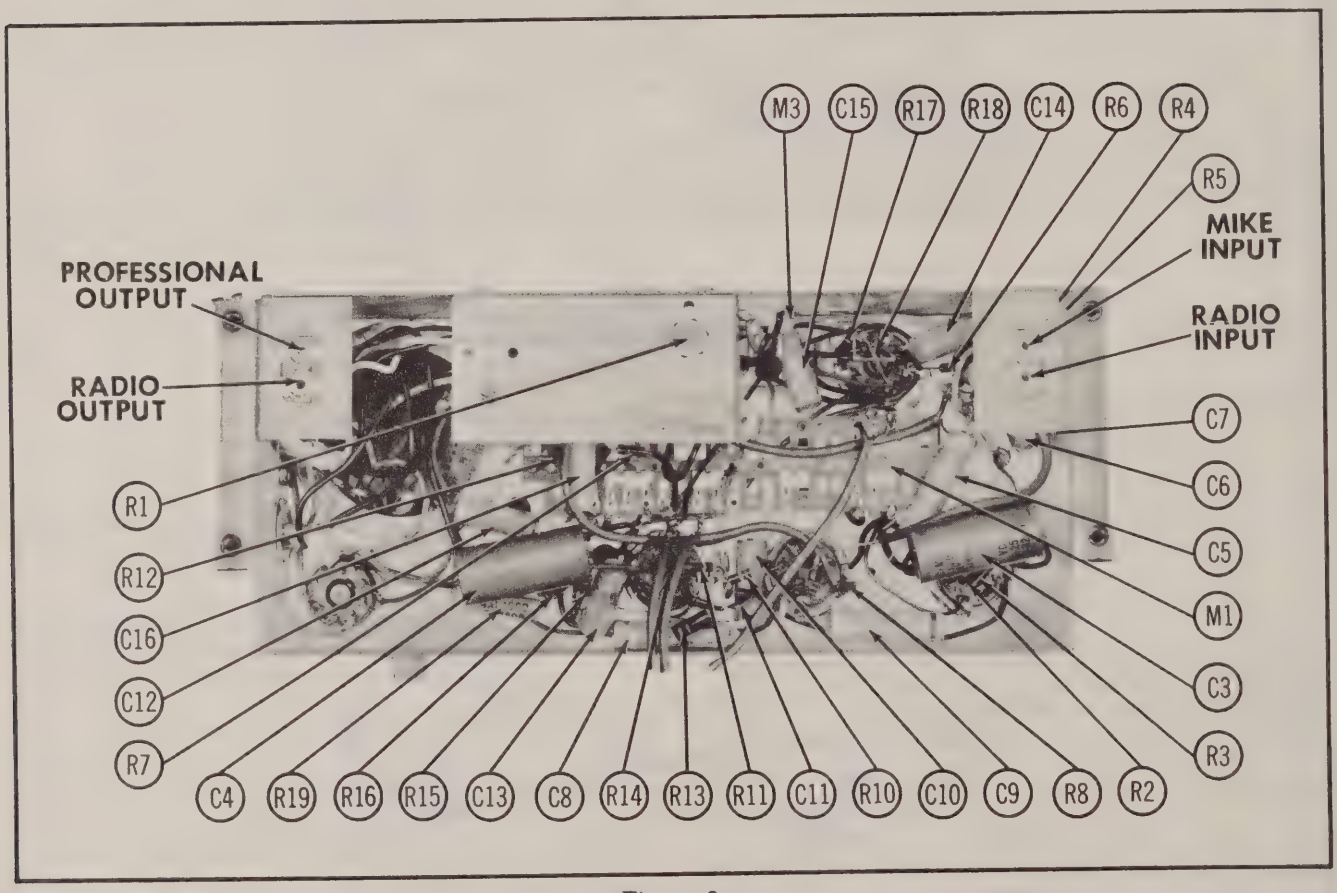
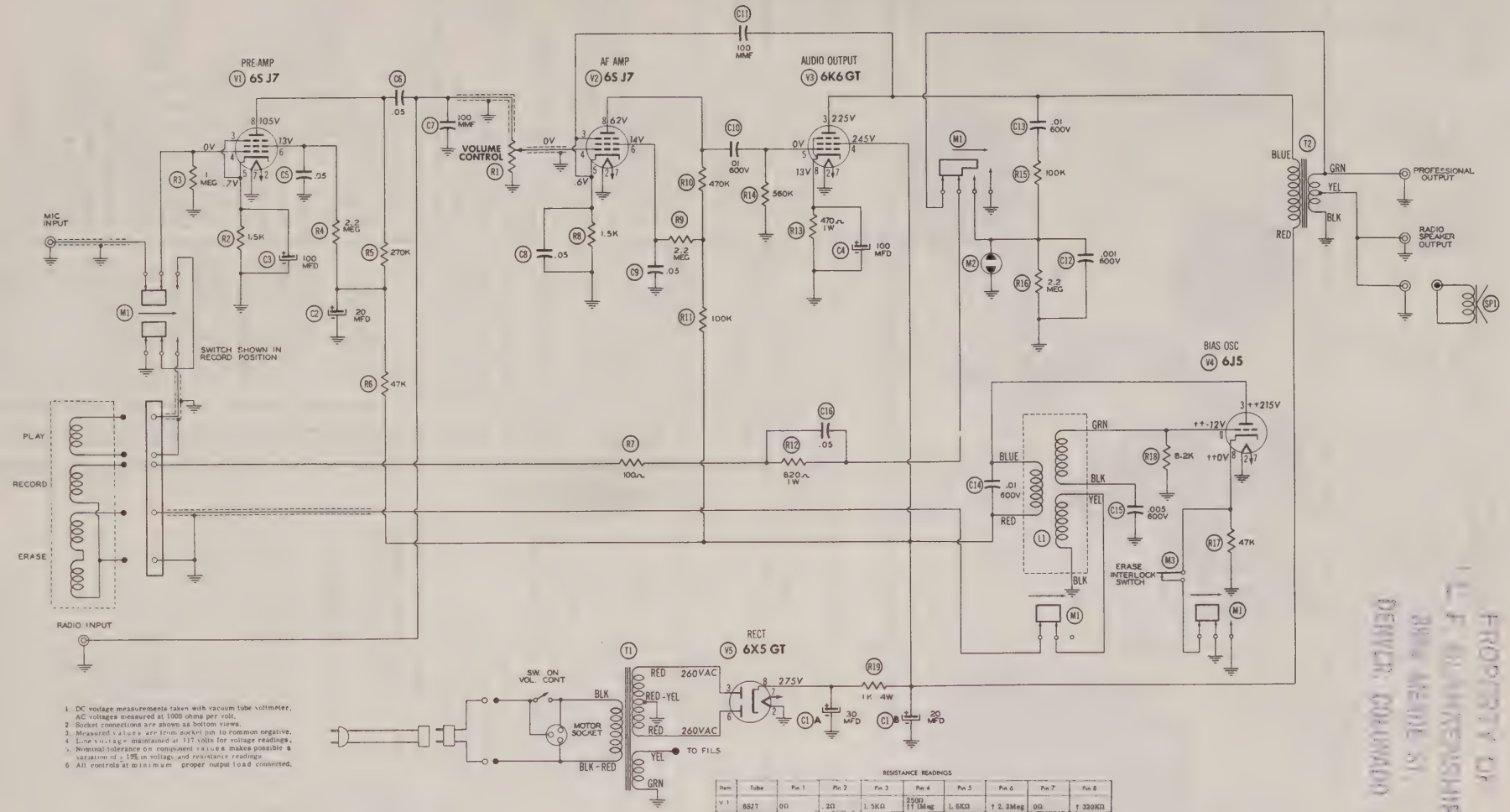


Figure 6



1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage, and resistance readings.
6. All controls at minimum proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	.2Ω	1.5KΩ	250Ω †† 1Meg	1.5KΩ	† 2.2Meg	0Ω	† 320KΩ
V 2	6SJ7	0Ω	0Ω	1.5KΩ	0Ω	1.5KΩ	† 2.2Meg	.2Ω	† 570KΩ
V 3	6K6	TP	0Ω	† 1.5K	† 1KΩ	360KΩ	NC	.2Ω	470Ω
V 4	6J7	TP	0Ω	†† 1KΩ	TP	†† 8.2KΩ	TP	.2Ω	†† 0Ω
V 5	8X5	TP	0Ω	230Ω	NC	NC	210Ω	.2Ω	70KΩ

NOTE: READINGS TAKEN IN PLAY POSITION UNLESS OTHERWISE INDICATED.
† MEASURED FROM PIN 8 OF V5.
†† MEASURED IN RECORD, ERASE POSITION.

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308-4

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MODEL 110

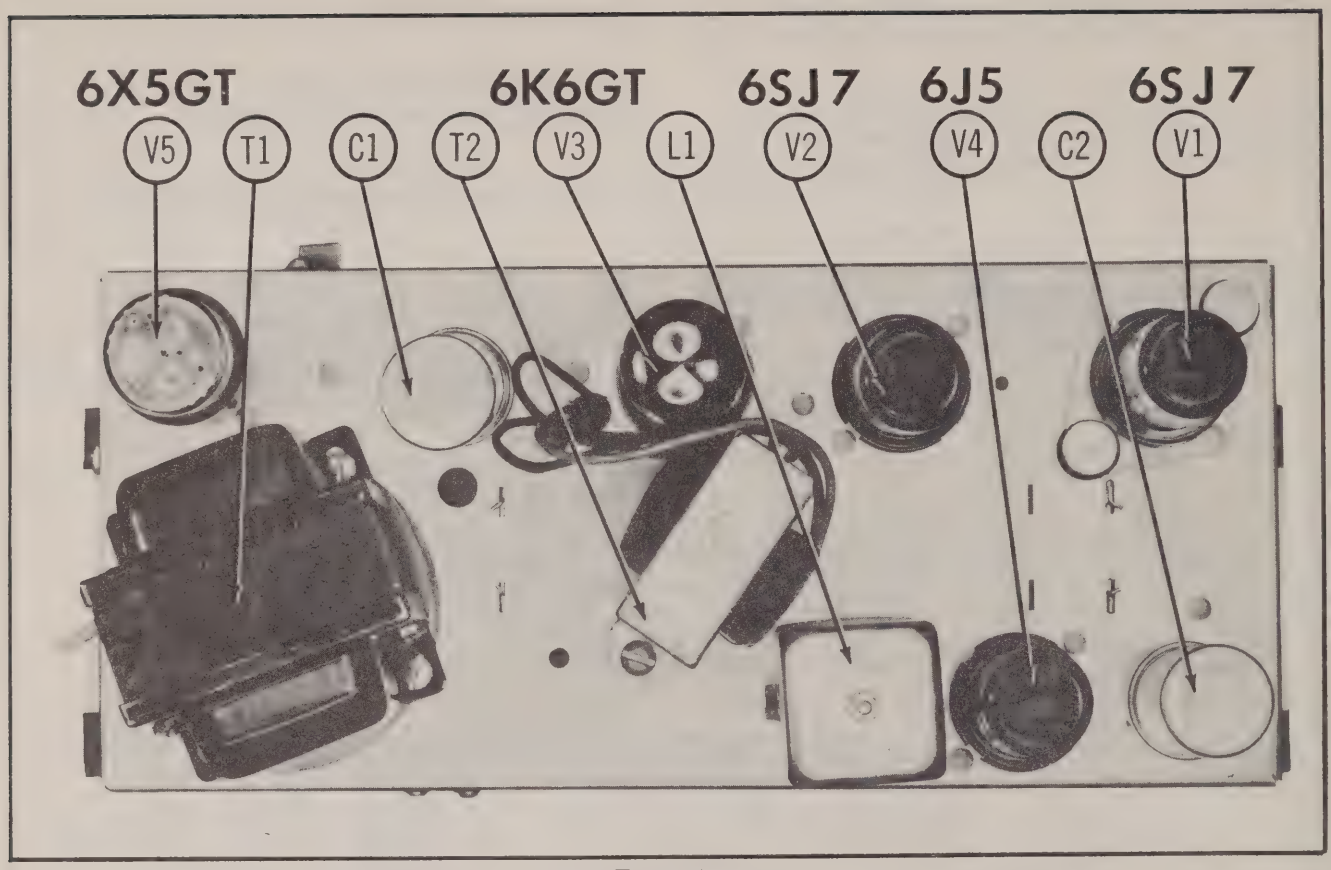

Figure 7

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1		Rewind-Stop-Forward Control Knob	27	TR-101-2002	"O" Ring Belt
			28	TR-301-2184	Bakelite Washer
2	TR-101-7031	Phillips Round Head Screw, 6-32	29	TR-101-2012	Felt Washer
3	TR-101-1061A	Upper Head Shield	30	TR-101-2081	Belt Pulley & Bushing Ass'y.
4	TR-101-1027	.010" Shield	31	TR-101-7005	Binder Head Machine Screw, 4-40-3/16
5	TR-301-1062	Head Assy. (cartridge only)			
6	TR-101-1027	.010 Shield	32	TR-101-2079	Tape Disc Assembly
7	TR-301-1065A	Lower Head Shield	33		Base Spacer
8		Tape Drive Small	34	TR-301-2194	Take-up Drum Assembly
8A		Thumb Screw	35	TR-301-2185	Bakelite Washer
9		Tape Drive Large	36	TR-301-2184	Bakelite Washer
9A		Thumb Screw	37		Belt Pulley Lever and Bushing
10		On-Off-Volume Control Knob	38	TR-101-2101	Brake Drive Spring
11		Record-Listen Control Knob	39		Brake Assembly
12		Phillips Round Head Machine Screw	40	TR-101-2012	Felt Washer
			42	TR-301-2185	Bakelite Washer
13		Phillips Head Self Tapping Screw	43		Control Link Assembly
			44	TR-101-2042	Idler Lever Spring Clip
14		Pressure Roller Pivot Arm	45	TR-101-2038	Idler Lever Spring
15		Pressure Roller Arm Pivot Rod	46	TR-101-2071	Spring Retainer
			47	TR-101-2031	Retaining Washer
16		Pressure Roller Arm and Rod Tension Spring	48	TR-101-2065	Fishpaper Washer
			49	TR-101-2044	Bakelite Washer
17		Top Plate	50	TR-101-2089	Idler Lever & Pin Ass'y.
18	TR-101-2033	Motor Belt Pulley	51	TR-301-2178	Base & Bushing Ass'y.
19	TR-101-7004	Allen Set Screw, 6-32	52	TR-101-2070	Felt Washer
20	TR-101-2073	Spring Retainer	53	TR-301-2185	Bakelite Washer
21	TR-101-2044	Bakelite Washer	54	TR-101-2073	Spring Retainer
22	TR-101-2030	Felt Washer	55		Split Lockwasher
23	TR-101-2065	Fishpaper Washer	56		Hex Nut
24	TR-101-2003	Idler Wheel	57	TR-101-2039	Idler Cam Spring
25	TR-301-2195	Rewind Drum Assembly	58	TR-101-2043	Idler Cam
26		Capstan Drum Assembly	59		Bakelite Washer

MECHANICAL PART LIST - Con't

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
60		Spring Retainer			Fasco motor)
61	TR-101-2070	Felt Washer	68	TR-101-1000	Motor (Alliance)
62	TR-301-2185	Bakelite Washer		TR-101-2136	Motor (Fasco)
63	TR-301-2073	Spring Retainer	69	TR-101-2001	Grommet
64	TR-101-2070	Felt Washer	70	TR-101-2095	Fan
65	TR-301-2185	Bakelite Washer	71	TR-101-2073	Spring Retainer
66	TR-101-2073	Spring Retainer	72	TR-101-2006	Bushing
67	TR-101-2086	Motor Mounting Plate (for Alliance motor)	73	TR-101-2150	Washer
			74	TR-301-7002	Split Lockwasher, No. 10
	TR-101-2134	Motor Mounting Plate (for	75	TR-101-7003	Round Head Machine Screw

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
V1		6SJ7, Pre. -Amp.	R1		Volume Control, 500K, 1/2 W.
V2		6SJ7, A. F. Amp.	R2		Resistor, 1. 5K, 1/2 W.
V3		6K6GT, Audio Output	R3		Resistor, 1Meg. , 1/2 W.
V4		6J5, Bias Osc.	R4		Resistor, 2. 2Meg, 1/2 W.
V5		6 x 5 GT, Rectifier	R5		Resistor, 270K, 1/2 W.
C1A		Elect. Cap. , 30MFD @ 350V.	R6		Resistor, 47K, 1/2 W.
C1B		Elect. Cap. , 20MFD @ 350V.	R7		Resistor, 100Ω, 1/2 W.
C2		Elect. Cap. , 20MFD @ 350V.	R8		Resistor, 1. 5K, 1/2 W.
C3		Elect. Cap. , 100MFD @ 25V.	R9		Resistor, 2. 2Meg, 1/2 W.
C4		Elect. Cap. , 100MFD @ 25V.	R10		Resistor, 470K, 1/2 W.
C5		Cap. Molded Paper, . 05MFD @ 400V.	R11		Resistor, 100K, 1/2 W.
C6		Cap. Molded Paper, . 05MFD @ 400V.	R12		Resistor, 820Ω, 1 W.
C7		Cap. Ceramic, 100MMF.	R13		Resistor, 470Ω, 1 W.
C8		Cap. Molded Paper, . 05MFD @ 400V.	R14		Resistor, 560K, 1/2 W.
C9		Cap. Molded Paper, . 05MFD @ 400V.	R15		Resistor, 100K, 1/2 W.
C10		Cap. Molded Paper, . 01MFD @ 600V.	R16		Resistor, 2. 2Meg, 1/2 W.
C11		Cap. Ceramic, 100MMF	R17		Resistor, 47K, 1/2 W.
C12		Cap. Molded Paper, . 001MFD @ 600V.	R18		Resistor, 8. 2K, 1/2 W.
			R19		Resistor, 1K, 4W.
C13		Cap. Molded Paper. 01MFD @ 600V.	T1		Power Transformer
C14		Cap. Molded Paper, . 01MFD @ 600V.	T2		Output Transformer
			L1		Bias Osc. Coil
C15		Cap. Molded Paper, . 005MFD @ 600V.	M1		Selector Slide Switch
			M2		Neon Lamp
C16		Cap. Molded Paper, . 05MFD @ 400V.	M3		Erase Interlock Switch
			SP1		P. M. Speaker

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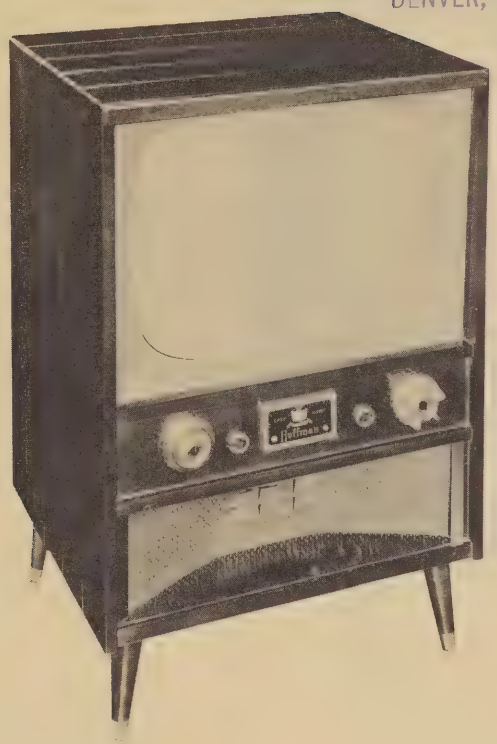

HOFFMAN MODEL 21M363

TRADE NAME	HOFFMAN	MODELS	CHASSIS
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		21B352S, U, U2, 21B364, U, U2, 21B729S, U, U2, 21M351S, U, U2, 21M363, U, U2, 21M728S, U, U2, 21P353S, U, U2, 21P365, U, U2, 21P730S, U, U2, 21P731S, U, U2, 21U208-5, U, U2.	412-21

MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.88 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 17
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet-Rear View 17
Capacitor Identification 3, 10
Chassis-Top View 11
RF Tuner 14, 17
Resistor Identification 4, 9
Photographs (Cont)
Trans., Inductor & Alignment Identification 11
Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Tuner) 15, 16
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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CHASSIS

411-21, 412-21

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs from front panel of cabinet.
2. Remove 1 metal screw, loosen 6 wood screws. Remove rear cover.
3. Disconnect speaker plug.
4. Remove 4 chassis bolts and 2 wood screws holding rear chassis mounting brackets to cabinet. Remove chassis.
5. Disconnect 3 connections at speakers. Remove 13 wood screws holding 3 speakers and phasing network.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 3 wood screws holding wood strip at the top edge of the safety glass. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

SPECIAL ADJUSTMENTS

The AGC control (R4) is located on front panel of chassis. Adjust R4 for MINIMUM snow in the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit is located on the front panel of chassis. Adjust the horizontal hold control until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A3) located on top of chassis.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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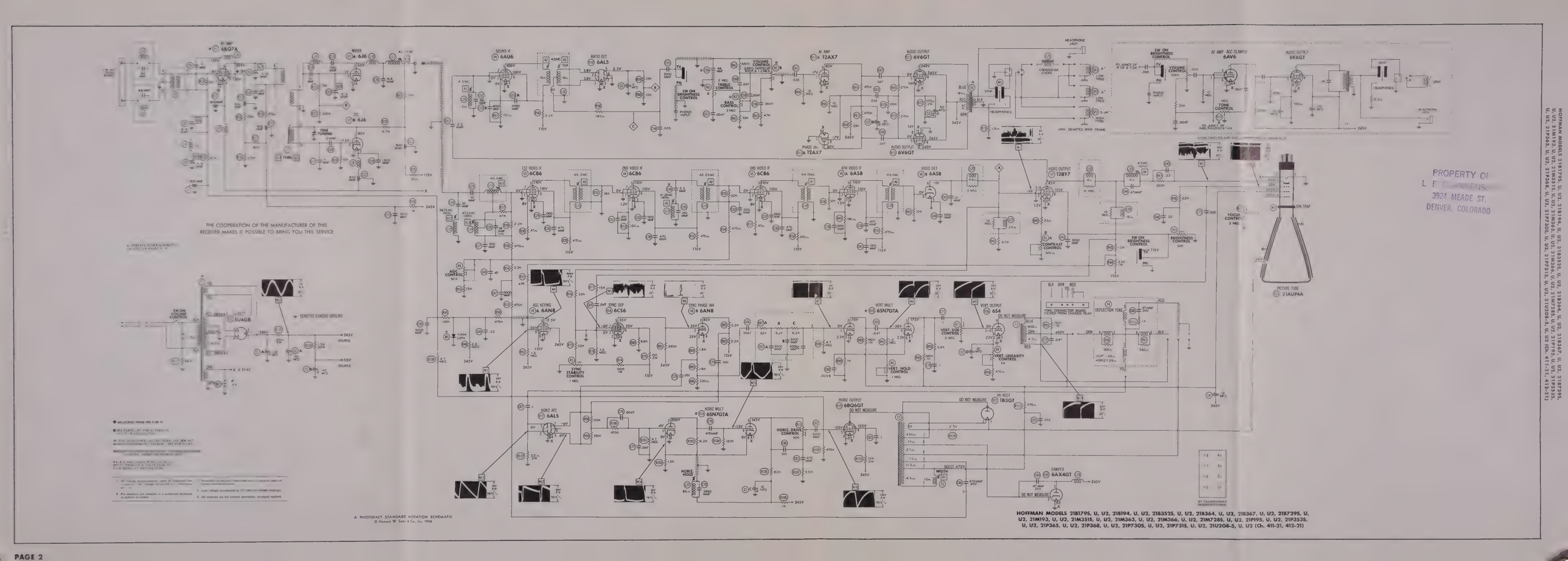
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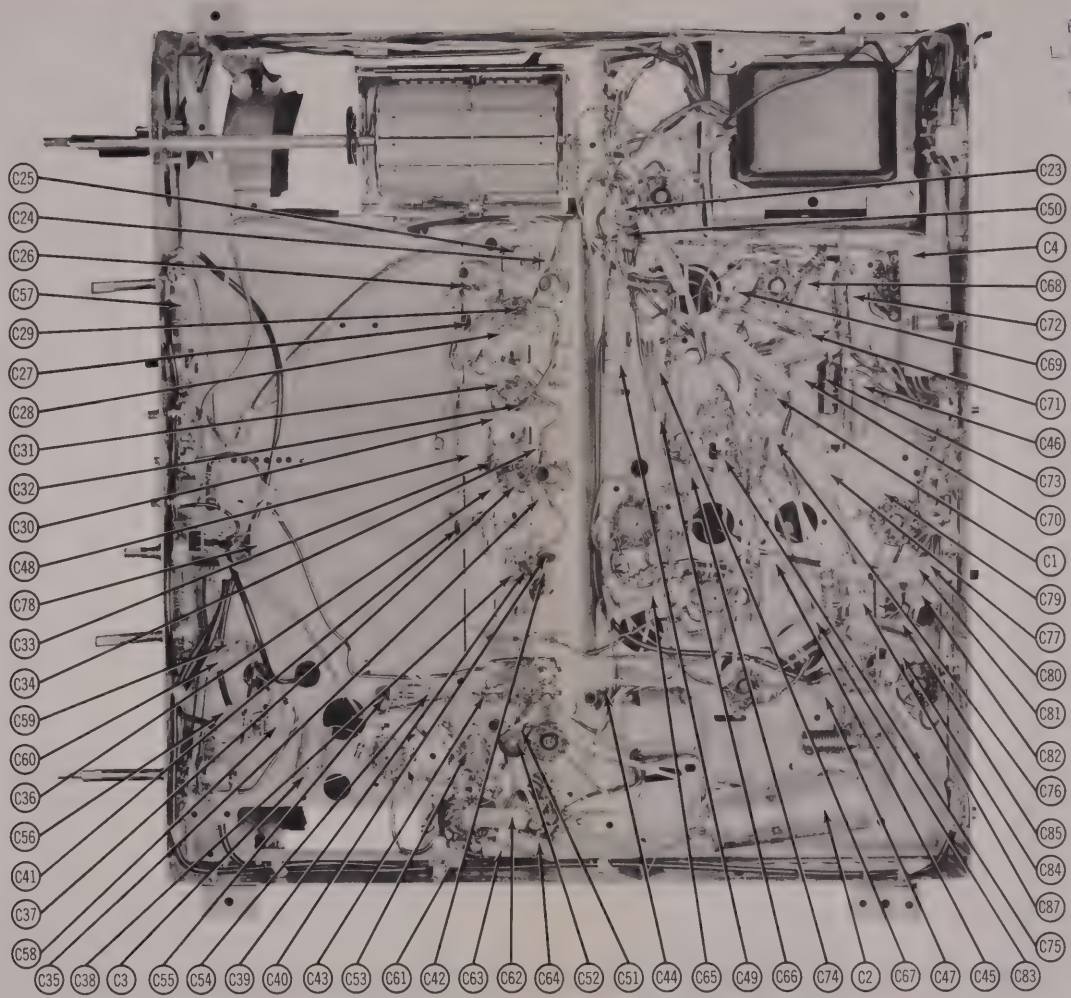

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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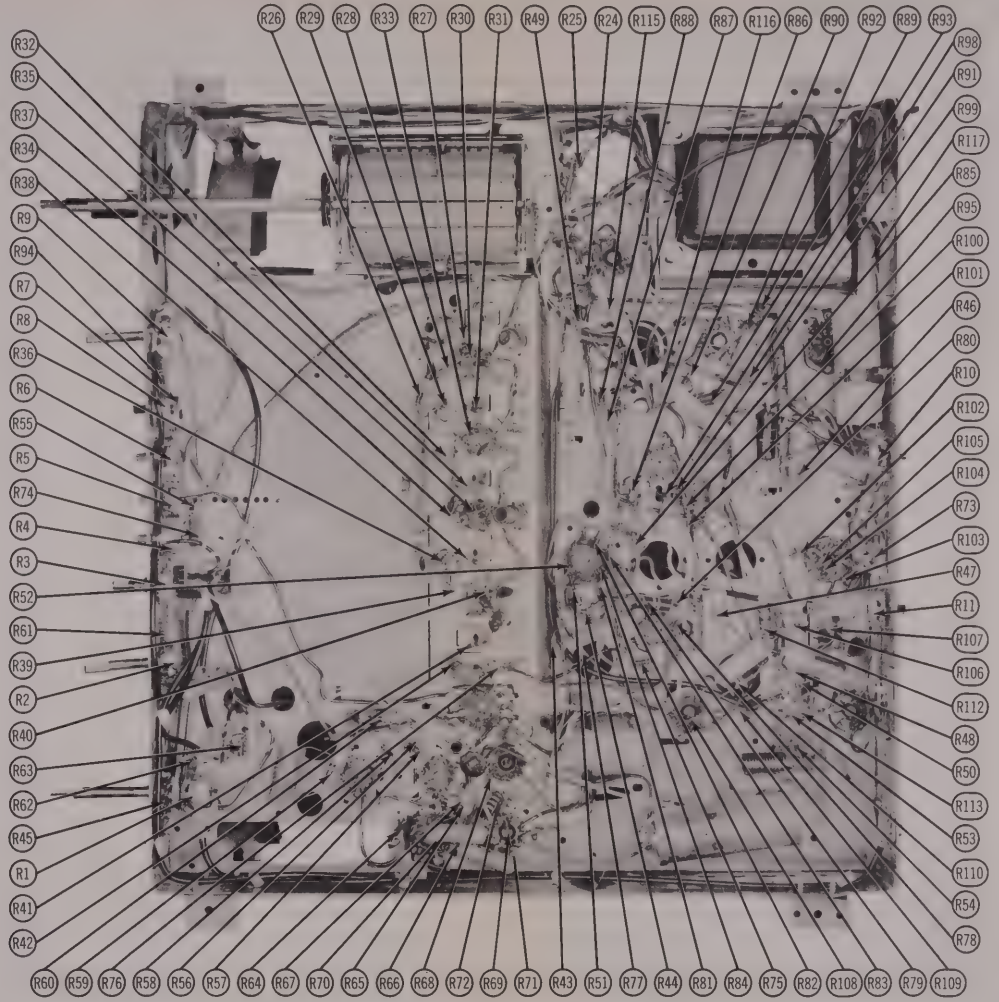

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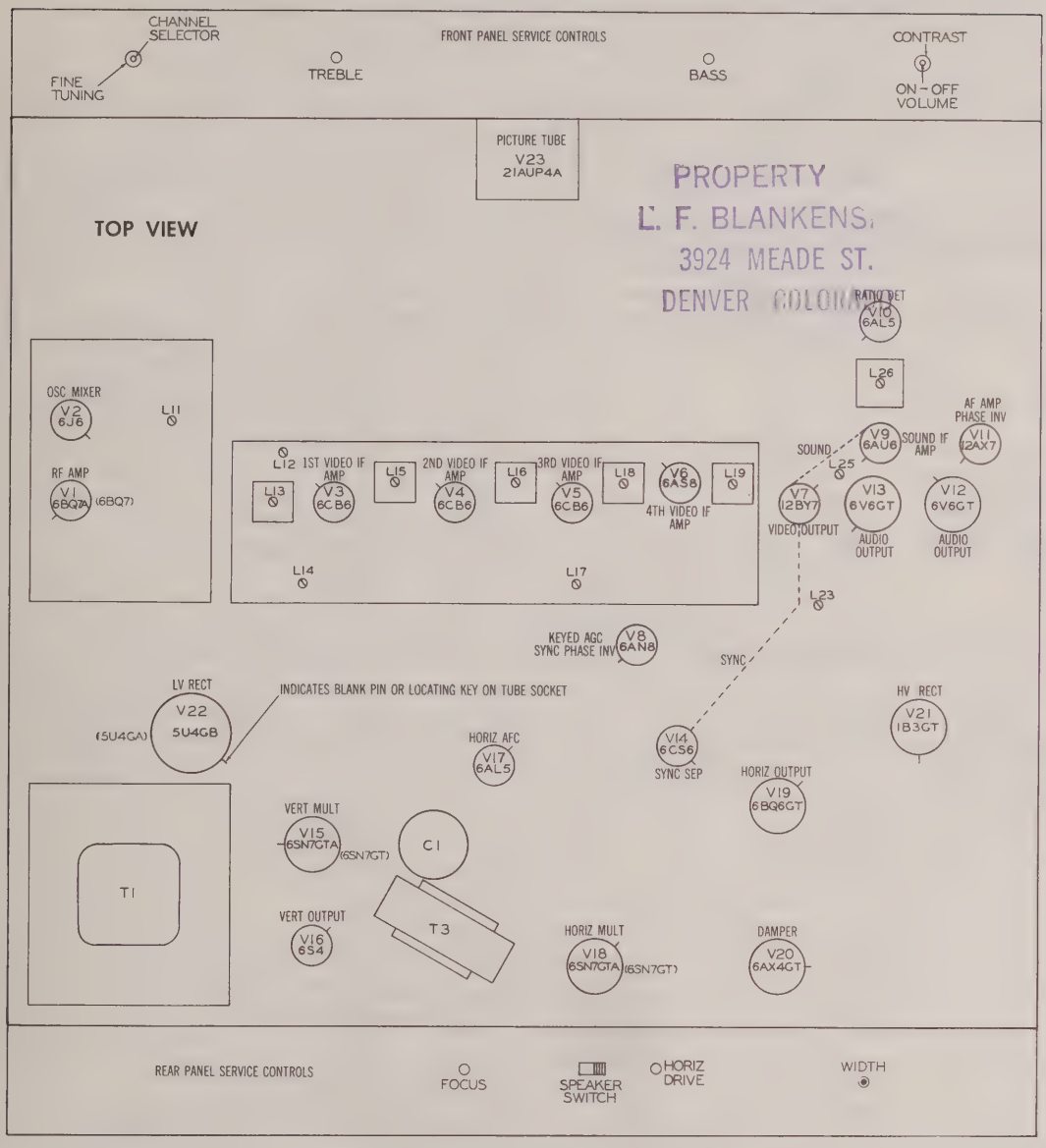
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V22

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V23
Has pic, no sound - V9, V10, V11, V12, V13
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V8, V15
No horiz. sync - V8, V17, V18
No vert. or horiz. sync - V8, V14

SWEEP FAILURE
No raster, has sound - V18, V19, V20, V21, V23
No vertical deflection - V15, V16
Poor vert. linearity or foldover - V15, V16
Poor horiz. linearity or foldover - V18, V19, V20
Narrow picture - V18, V19, V20, V21, V22
Vert. off freq. - V8, V15
Horiz. off freq. - V8, V17, V18

HOFFMAN MODELS 21B1795, U, U2, 21B194, U, U2, 21B3525, U, U2, 21B364, U, U2, 21B367, U, U2, 21B7295, U, U2, 21M193, U, U2, 21M3515, U, U2, 21M363, U, U2, 21M366, U, U2, 21M7285, U, U2, 21P193, U, U2, 21P3535, U, U2, 21P365, U, U2, 21P368, U, U2, 21P7305, U, U2, 21P7315, U, U2, 21U208-5, U, U2 (Ch. 411-21, 412-21)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Do not remove (V18) to eliminate the high voltage shock hazard. Switch the tuner between channels so that the detent roller rests on one of the high points of the drum disc. This will disable the local oscillator and reduce the possibility of erroneous indications.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Between any two channels	DC probe to point (B). Common to chassis.	A1, A3	Attenuate signal level to obtain 5 volts on VTVM. Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point (C). Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A1, A3	Disconnect stabilizing capacitor (C3). Adjust A1 and A3 for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A3	Reconnect C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A3 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn contrast control fully clockwise

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.008MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Between any two channels	DC probe to pin 11 (cathode) of picture tube thru detector (Fig. 3). Common to chassis.	A4	Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

Turn the contrast control fully counterclockwise. Connect the negative lead of a 3 volt battery to the ungrounded side of C48. Connect the positive lead to chassis. Alternate generator as low as possible to obtain readings.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	High side to an unground-ed tube shield floating over converter tube. Low side to chassis.	41.25MC (Unmod.)	Set between any two channels	DC probe to point (A). Common to chassis.	A5	Adjust for MINIMUM deflection.
5.	"	"	43.0MC	"	"	A6	Adjust for maximum deflection.
6.	"	"	44.75MC	"	"	A7	"
7.	"	"	42.25MC	"	"	A8	"
8.	"	"	45.5MC	"	"	A9	"
9.	"	"	43.5MC	"	"	A10	Adjust for MINIMUM deflection.
10.	"	"	43.5MC	"	"	A11	Adjust for maximum deflection.
11.	"	"	39.75MC	"	"	A12	Adjust for MINIMUM deflection.
12.	"	"	47.25MC	"	"	A13	"
13.	"	"	42.5MC	"	"	A11	Readjust for maximum deflection.
14.	"	"	42.25MC	"	"	A10	Readjust A10 for maximum deflection. Repeat steps 4 thru 14 until no further improvement is noted.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. Connect bias as under "Video IF Alignment".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Direct	High side to an unground-ed tube shield floating over converter tube. Low side to chassis.	43.5MC (00MC Swp.)	39.75MC 41.25MC 42.0MC 45.75MC 47.25MC	Set channel selector between any two channels	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 4. Use high scope gain and sweep generator output to view trap markers. If necessary, retouch A6, A8 and A9 for desired response. Band pass should be approximately 3.75MC. Adjust A9 to place 45.75MC at 50% on response curve. Adjust A8 to place 42.0MC marker. Adjust A6 to eliminate tilt.

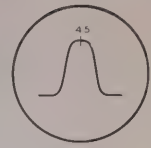


FIG. 1

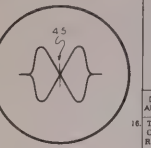


FIG. 2

FIG. 3

FIG. 4

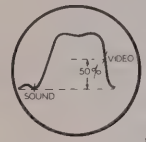


FIG. 5

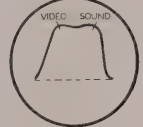


FIG. 6

VHF OSCILLATOR ALIGNMENT

In UHF-VHF tuners 9838 and 9861 complete oscillator alignment may not be necessary. If the oscillator seems to be off alignment approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A30. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A30 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment screw for each channel that is off frequency.

NOTE: Adjustment A30 is not in VHF tuner 9839. The channel oscillator adjustment screws in VHF tuner 9839 are reached through a hole just to the right of the channel switch shaft. In UHF-VHF tuners 9838 and 9861 the channel oscillator adjustment screws are reached through a hole just to the left of the channel switch shaft (hole extends through UHF tuner). The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Connect bias as under Video IF Alignment. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 8. Video Marker should be at 50%.
			207MC (10MC Swp.)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp.)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp.)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp.)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp.)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A25	

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VHF RF AND MIXER ALIGNMENT

Leave bias connected as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 6, with markers above 90%.
18.	"	"	213MC (10MC Swp.)	211.25MC 215.75MC	13	"		If markers fall below 70% on any one channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp.)	199.25MC 203.75MC	11			
			195MC (10MC Swp.)	193.25MC 197.75MC	10			
			189MC (10MC Swp.)	187.25MC 191.75MC	9			
			183MC (10MC Swp.)	181.25MC 185.75MC	8			
			177MC (10MC Swp.)	175.25MC 179.75MC	7			
			85MC (10MC Swp.)	83.25MC 87.75MC	6			
			79MC (10MC Swp.)	77.25MC 81.75MC	5			
			69MC (10MC Swp.)	67.25MC 71.75MC	4			
			63MC (10MC Swp.)	61.25MC 65.75MC	3			
			57MC (10MC Swp.)	55.25MC 59.75MC	2			

43.5MC TRAP ADJUSTMENT

Adjust the 43.5MC Trap adjustment (A29) for MINIMUM interference on channel 2.

UHF OSCILLATOR ALIGNMENT FOR UHF-VHF TUNER 9838

Switch tuner to UHF position and remove tuner knobs. The UHF oscillator adjustment screws are reached thru the same hole used for VHF oscillator adjustment. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel strip. Leave bias connected as under "VHF Oscillator Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

UHF OSCILLATOR ALIGNMENT FOR UHF-VHF TUNER 9861

In the event the UHF oscillator tube is replaced, it is recommended that several tubes be tried and the one which works best should be used. Alignment of this portion of the tuner should not be required in the field.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	473MC (10MC Swp.)	471.25MC 475.75MC	14	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A31	Adjust to place sound marker in trap notch as in Fig. 8. Video marker should be at 50%.
			515MC (10MC Swp.)	513.25MC 517.75MC	31		A32	
			573MC (10MC Swp.)	573.25MC 577.75MC	31		A33	
			635MC (10MC Swp.)	633.25MC 637.75MC	41		A34	
			695MC (10MC Swp.)	693.25MC 697.75MC	51		A35	
			755MC (10MC Swp.)	753.25MC 757.75MC	61		A36	
			815MC (10MC Swp.)	813.25MC 817.75MC	71		A37	
			875MC (10MC Swp.)	873.25MC 877.75MC	81		A38	

UHF RF AND MIXER ALIGNMENT FOR UHF-VHF TUNERS 9838 AND 9861

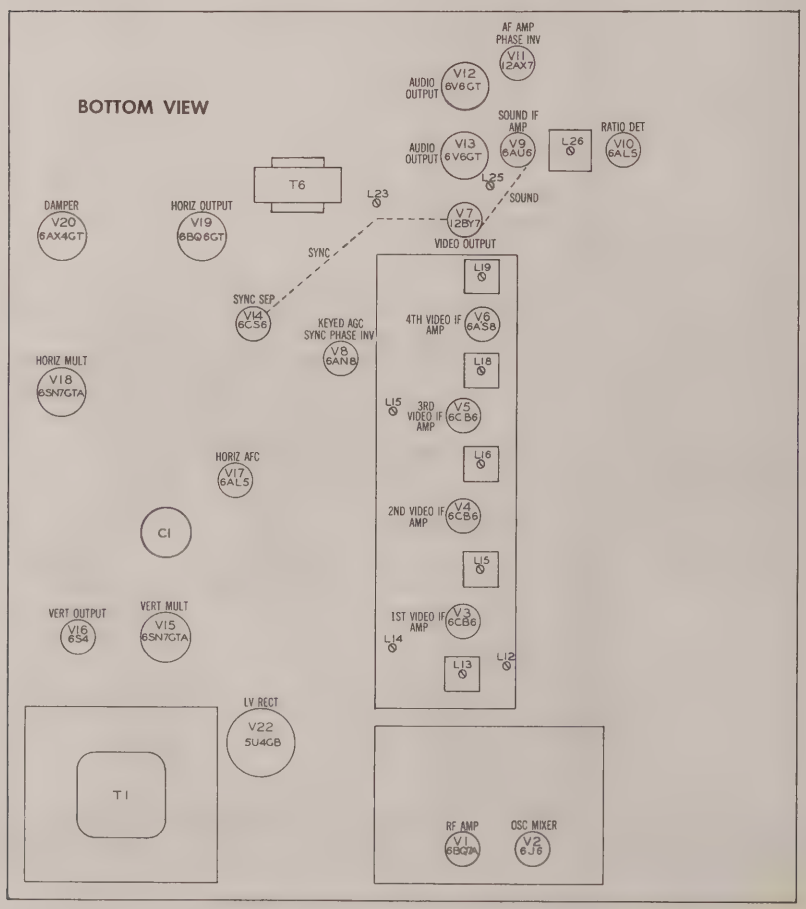
The RF and Mixer portion of these tuners have been properly aligned at the factory and are very stable. Alignment should not be required in the field

HOFFMAN MODELS 21B17295, U, U2, 21B184, U, U2, 21B3395, U, U2, 21B3446, U, U2, 21B3457, U, U2, 21B7295, U, U2, 21M1193, U, U2, 21M3315, U, U2, 21M3643, U, U2, 21M7245, U, U2, 21P1935, U, U2, 21P3505, U, U2, 21P3508, U, U2, 21P7305, U, U2, 21P7315, U, U2, 21V208-5, U, U2 (CH. 411-421, 413-23)

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	800KΩ	0Ω	.1Ω	0Ω	† 1.6KΩ	220KΩ	INF	0Ω
V 2	6J6	† 6.5KΩ	† 17KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	65KΩ	47Ω	.1Ω	0Ω	† 2.1KΩ	† 2.1KΩ	0Ω		
V 4	6CB6	.1Ω	120Ω	.1Ω	0Ω	† 2.1KΩ	† 2.1KΩ	0Ω		
V 5	6CB6	65KΩ	47Ω	.1Ω	0Ω	† 2.1KΩ	† 2.1KΩ	0Ω		
V 6	6AS8	† 2.1KΩ	.1Ω	180Ω	0Ω	.1Ω	4.7KΩ	0Ω	.1Ω	† 2.1KΩ
V 7	12BY7	180Ω	4.7KΩ	0Ω	0Ω	0Ω	.1Ω	† 6.5KΩ	† 1.6KΩ	0Ω
V 8	6AN8	† 6KΩ	† 390KΩ	3.6KΩ	.1Ω	0Ω	500KΩ	† 120Ω	† 50KΩ	† 1.6KΩ
V 9	6AU6	1.2Ω	0Ω	.1Ω	0Ω	† 3.8KΩ	† 3.8KΩ	150Ω		
V 10	6AL5	INF	INF	.1Ω	0Ω	20KΩ	0Ω	0Ω		
V 11	12AX7	† 500KΩ	10Meg	0Ω	.1Ω	.1Ω	† 500KΩ	10Meg	0Ω	0Ω
V 12	6V6GT	NC	0Ω	† 317Ω	† 120Ω	370KΩ	TP	.1Ω	270Ω	
V 13	6V6GT	TP	0Ω	† 317Ω	† 120Ω	370KΩ	TP	.1Ω	270Ω	
V 14	6CS6	0Ω	0Ω	0Ω	.1Ω	† 390KΩ	† 15KΩ	1.5Meg		
V 15	6SN7GTA	4.7Meg	▲ 180KΩ	1KΩ	1.5Meg	▲ 680KΩ	1KΩ	.1Ω	0Ω	
V 16	6S4	NC	2KΩ	1.5Meg	0Ω	.1Ω	1.5Meg	NC	NC	▲ 2.2KΩ
V 17	6AL5	22Ω	22Ω	0Ω	.1Ω	5Meg	NC	5Meg		
V 18	6SN7GTA	4.7Meg	† 9.5KΩ	1.5KΩ	120KΩ	† 85KΩ	1.5KΩ	.1Ω	0Ω	
V 19	6BQ6GT	TP	0Ω	NC	† 10KΩ	470KΩ	NC	.1Ω	0Ω	TOP CAP ▲ 25Ω
V 20	6AX4GT	NC	NC	500KΩ	NC	† 120Ω	NC	0Ω	.1Ω	
V 21	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 455Ω
V 22	5U4GB	NC	15KΩ	TP	24Ω	NC	23Ω	NC	15KΩ	
V 23	21AUP4A	0Ω	† 40KΩ	PIN 6 ▲ 1Meg	PIN 10 ▲ 500Ω	PIN 11 † 220KΩ	PIN 12 .1Ω			

† MEASURED FROM PIN 2 OF V22.
▲ MEASURED FROM PIN 3 OF V20.
TP-TIE POINT.
NC-NO CONNECTION



TUBE PLACEMENT CHART

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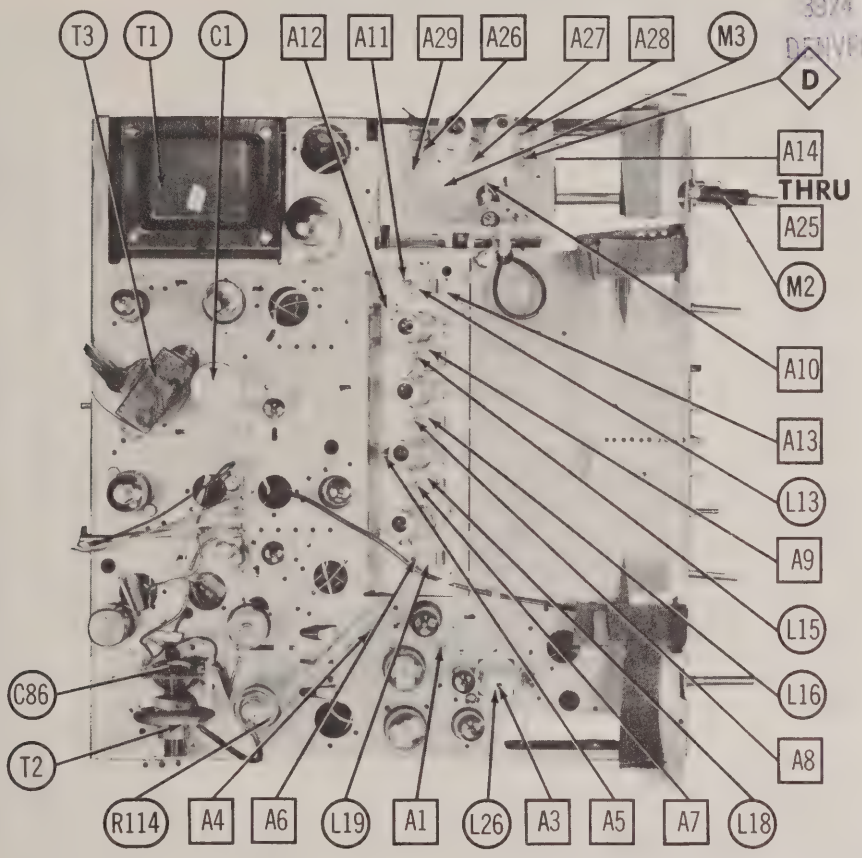
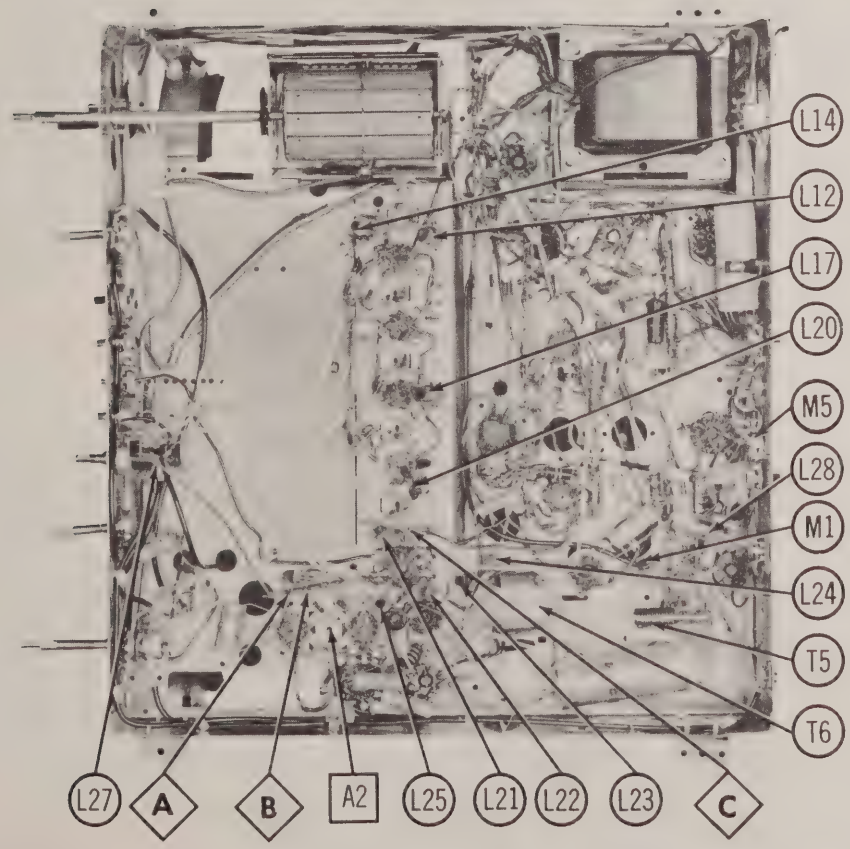


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

HOFFMAN MODELS 21B1795, U, U2, 21B194, U, U2, 21B3525, U, U2, 21B364, U, U2, 21B367, U, U2, 21B7295, U, U2, 21M193, U, U2, 21M3515, U, U2, 21M363, U, U2, 21M366, U, U2, 21M7285, U, U2, 21P195, U, U2, 21P3535, U, U2, 21P365, U, U2, 21P368, U, U2, 21P7305, U, U2, 21P7315, U, U2, 21U208-5, U, U2 (Ch. 411-21, 412-21)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: HOFFMAN PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	6BQ7 may be used
V2	Mixer-Osc	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.				
	Video Detector	6AS8	6AS8	9DS	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying-				
	Sync Phase Inv.	6AN8	6AN8	9DA	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	9BT	
V11	AF Amplifier-				
	Phase Inverter	12AX7	12AX7	9A	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync Separator	6CB6	6CB6	7CB	
V15	Vert. Mult.	6BN7GTA	6BN7GTA	9BD	6BN7GT may be used
V16	Vert. Output	6B4	6B4	8AC	
V17	Horiz. AFC	6AL5	6AL5	9BT	
V18	Horiz. Mult.	6BN7GTA	6BN7GTA	9BD	6BN7GT may be used
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	5AX4GT	5AX4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	9C	
V22	LV Rectifier	5U4GB	5U4GB	5T	5U4GA may be used

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: HOFFMAN PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V23	21AUP4A ①	21AUP4A ①		21AUP4A ① 21AUP4A/B ② ②	21AUP4A ①	1EL 1EL	① Aluminized ② Silver screen "SS"
	21AUP4			21AUP4	21AUP4	1EL	

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT.	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	4100	350			DU8	FP247	TM-4044	Q-920	TVL-4375
B	40	350			BR4035	TC62	TD-40-350	MT-4540	TVA-1611
C	10	350							
C2A	100	350			C023		TM-4113	Q-321.5	TVL-3540
B	200	350			BBRD3315				TVA-3480
C	50	50							
D	30	50							
C3	5	50		SR250Y5	BR650	TC30	TD-5-50	MWT-0505	TVA-1303
C4	10	500	(Note 2)	PR500V10	BRV610	TC92	TD-10-500	MT-4520 *	
								MT-4530	

Note 1. Some versions may use 30MFD in this application.
* Connect units in series.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	3-8				829-10					
C6	3-8				829-10					
C7	1000			NPO-DI5	TCZ-5R3	Z007	NPOA-020	ZT-552	5TCCB-V33	
C8	3				829-3		3125-01-CH5	CT565A		
C9	1.5-3			DI-00013	DD-1Z1	G044	01-151	UC-5312	5GA-T12	
C10	120									
C11	800									
C12	800									
C13	500									
C14	51			BPD-00005	DD-500	G035	531-510	UC-545	5GA-Q5	
C15	1.5-3				829-3		3125-01-CH5	CT565A		
C16	10			NPO-D10	TCZ-10	Z018	NPOK-100	ZT-541	5TCCB-V47	
C17	5									
C18	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C19	1500			BPD-0015	DD-152	K071	501-0015	DC-5215	5HK-D15	
C20	6.8			BPD-D6.8	TCZ-6R8	Z013	NPOA-6R8	ZT-5566	5TCCB-V68	
C21	500									
C22	800									
C23	5000			BPD-005	DD-502	K060	811-006	DC-535	5HK-D5	
C24	33			NPO-D33	TCZ-33	Z032	NPOL-330	ZT-5433	5TCC-Q33	
C25	10			NPO-D10	DD-100	Z009	NPOK-100	ZT-541	5GA-Q	
C26	56	1000		NPO-S156	TCZ-56	Z036	NPO-337-560			
C27	5000			BPD-001	DD-102	K069	501-001	DC-531	5HK-D1	
C28	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C29	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C30	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C31	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C32	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C33	1000			BPD-001	DD-102	K069	801-001	DC-531	5TCCB-V33	Note 2
C34	3.3			NPO-S3.3	TCZ-3R3	TZ05	NPOA-3R3			
C35	100			NPO-D100	TCZ-101	G045	NPO-337-101	ZT-531	5TCC-T	
C36	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C37	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C38	470			BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C39	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C40	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C41	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C42	10			NPO-D10	DD-100	Z009	NPOK-100	ZT-541	5GA-Q	
C43	5000			BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C44	47			NPO-D10	TCZ-47	G033	NPO-338-470	ZT-5447	5GA-Q47	
C45	.22	300		P288N-22		CUB3P22		PT6022	3TM-P22	
C46	.22	300		P288K-22		CUB3P22		PT6022	3TM-P22	
C47	5000			BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C48	.47	300		P288N-47		CUB3P47		PT6047	3TM-P47	
C49	.22	300		P288N-22		CUB3P22		PT6022	3TM-P22	
C50	5000			BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C51	2.2			NPO-S2.2	TCZ-2R2	TZ05	NPOA-2R2		5TCCB-V22	
C52	68			NPO-D68	TCZ-68	TZ08	NPO-337-680		5TCC-Q68	
C53A	4000			BPD-D2.004	DE-403		833-004	DCD-524	5HK-D2	
B	4000				DE-402					
C54	.005	400		BPD-005	DE-503	CUB6D5	GP2-333-503	PT625	6TM-D5	

Note 3. Some versions use 1.5MMF in this application.
Note 3. Some versions use 320MMF in this application.
* Items C67A, C67B, C67C, R87A, R87B and R87C are combined in one unit.

CAPACITORS (cont)

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C55	5000			BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C56	68			BPD-000068	DD-680	G038	GP1K-680	DC-5468	5GA-Q68	Note 3
C57	.0047	400		BPD-0047	DE-473	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C58	.0047	400		BPD-0047	DE-473	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C59	.0047	400		BPD-0047	DE-473	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C60	.047	400		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C61	.033	400		BPD-03	DF-303	CUB6S33		PT6133	6TM-S33	
C62	.047	400		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C63	.033	400		BPD-03	DF-303	CUB6S33		PT6133	6TM-S33	
C64	.047	400		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C65	.047	400		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C66	.0047	400		BPD-0047	DE-473	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C67A	3000							DC-522		
B	5000		*	4PA-1I0	4PC-100	41151M1	44405-01	DC-525	4V-1	
C	5000							DC-525		
C68	.0039	400		1464-0039		BRD39		MCB345	MS-339	
C69	.047	200		BPD-05	DF-503	CUB2S47		PT6147	2TM-S47	
C70	.1	600		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C71	.1	600		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C72	.047	600		BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C73	.033	600		BPD-03	DF-303	CUB6S33	517-03	PT6133	6TM-S33	
C74	.001	400		BPD-001	DE-103	CUB6D1	GP2L-102	PT621	6TM-D1	
C75	.001	400		BPD-001	DE-103	CUB6D1	GP2L-102	PT621	6TM-D1	
C76	.047	400		BPD-0047	DE-473	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C77	.047	200		BPD-05	DF-503	CUB2S47		PT6147	2TM-S47	
C78	3900	500		1464-0039		BRD39		MCB345	MS-339	
C79	470	500		1464-00047	D6-471	SR5T47	511-471	MCB345	MS-347	
C80	.001	400		BPD-001	D6-103	CUB6D1	GP2L-102	PT621	6TM-D1	
C81	500			1464-00047	D6-471	SR5T47	511-471	MCB345	MS-347	
C82	5000			BPD-005	DD-502	K060	811-005	DC-525	5HK-D5	
C83	.1	400		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C84	47	3000		HVD-30-47	DD30-470	V3Y47	3KV-470	DC30447	3GA-Q47	
C85	.033	600		P688N-033	DF-303	CUB6S33		PT6133	6TM-S33	
C86	470	3000		HVD-30-470	DD30-471	V3Y47	3KV-471	DC30347	3GA-T47	
C87	.1	600		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C88	47	3000		HVD-30-47	DD30-470	V3Y47	3KV-470	DC30447	3GA-Q47	

CONTROLS

ITEM No	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω		4915					Contrast (Panel)See Note 1
B	2Meg							Volume & Switch (Rear)
C			4910	F1-1	RTV-483	QJ-527 †	UF531. *	Contrast (Panel) See Note 2
R1A	500Ω		4910	F1-16			UR16-T184	Volume (Rear) Tap at 150KΩ
B	500KΩ			KS-1			UR-56	Attach to R1B.
C	Switch			B-T5			U-56	Base-See Note 1
R2A	2Meg		4975	A47-2Meg-S	Q11-159		TA54L	Attach to R2A.
B	Shaft		Not Req.	FS-3	Q11-154		Not Req.	Brightness, Phono Switch
R3	50KΩ		4987			Q11-123	TA54L	AGC
R4A	50KΩ		4984-2	BX-31	A47-50K-S	Not Req.	Not Req.	Attach to R4A.
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	TA16L	Sync Stability
R5A	1Meg		4801A-1	BX-89	A47-1Meg-S	Q11-157	Not Req.	Attach to R5A.
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	TA16L	Vertical Hold
R6A	1Meg		4801A-1	BX-89	A47-1Meg-S	Q11-157	Not Req.	Vertical Hold
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	TA16L	Attach to R6A.
R7A	2Meg		4965	BX-75	A47-2Meg-S	Q11-159	TA36L	Vertical Size
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	TA16L	Attach to R7A.
R8A	500Ω		4996	EX10	A47-500Ω-S	Q11-154	TA51L	Vertical Linearity
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	Not Req.	Attach to R8A.
R9A	2Meg		4978	B-T5	A47-2Meg-S	Q11-159	U-56	Treble - See Note 1
B	Shaft		Not Req.	FS-3	Not Req.	Not Req.	Not Req.	Attach to R9A.
R10A	2Meg		4965	BX-75	A47-2Meg-S	Q11-159	TA36L	Focus
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	Not Req.	Attach to R10A.
R11A	50KΩ		4984	BX-31	A47-50K-S	Q11-123	TA54L	Horizontal Drive
B	Shaft		Not Req.	FKS-1/4	A47-Shaft-S	Not Req.	Not Req.	Attach to R11A.
R12A	1Meg		4980	AB-59	A47-1Meg-S	Q11-157	TA16L	Tone-See Note 2
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R12A.

Note 1. Used in chassis 412-21 only.
Note 2. Used in chassis 411-21 only.
* Concentrikit Equivalent; K-4 Kit, Base Elements and Shafts; Bil-103, P1-304 (Panel)
Bil3-153Xx, R1-233 (Rear)
78-1 (Switch)
† Concentrikit Equivalent; K-2 Kit, Base Elements and Shafts; Bil-103, P1-304 (Panel)
Bil3-153X, R1-233 (Rear)
78-1 (Switch)
* Universal Replacement (Mallory Exact Duplicate Part No. UR-78)

RESISTORS

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: HOFFMAN PART No.	IRC PART No.	NOTES
R13	47KΩ			BTS-47K	
R14	15KΩ				
R15	100KΩ			BTS-100K	
R16	270KΩ			BTS-270K	
R17	180KΩ			BTS-180K	
R18	47Ω			BTS-47Ω	
R19	10KΩ				
R20	4700Ω			BTS-4700	
R21	15KΩ				
R22	220KΩ				
R23	15KΩ				
R24	1000Ω			BTS-1000	
R25	47KΩ			BTS-47K	
R26	150KΩ			BTS-150K	
R27	47KΩ			BTS-47K	
R28	47Ω			BTS-47Ω	
R29	10KΩ				
R30	4700Ω			BTS-4700	
R31	15KΩ				
R32	220KΩ				
R33	15KΩ				
R34	1000Ω			BTS-1000	
R35	150Ω			BTS-150	
R36	47Ω			BTS-47Ω	
R37	47KΩ				
R38	15KΩ				
R39	47Ω			BTS-47Ω	
R40	180Ω			BTS-180	
R41	12KΩ			BTS-12KΩ	
R42	470Ω			BTS-470	
R43	1500Ω			BTS-1500	
R44	3300Ω			BTA-3300	
R45	33Ω			BTS-33	
R46	22KΩ			BTS-22K	
R47	220KΩ			BTS-220K	
R48	2.2MegΩ			BTS-2.2MegΩ	
R49	180KΩ			BTS-180K	
R50	470KΩ			BTS-470K	
R51	47KΩ			BTS-47K	
R52	1.5MegΩ	5%		BTS-1.5MegΩ 5%	
R53	470KΩ			BTS-470K	
R54	3300Ω	5%		BTS-3300Ω 5%	
R55	15KΩ			BTS-15K	
R56	2200Ω			BTS-2200	
R57	150Ω			BTS-150	
R58	180Ω			BTS-180	
R59	10KΩ			BTS-10K	
R60	10KΩ			BTS-10K	
R61	33KΩ			BTS-33K	
R62	680KΩ			BTS-680K	
R63	47KΩ			BTS-47K	
R64	10MEG			BTS-10MEG	
R65	470KΩ			BTS-470K	
R66	10MEG			BTS-10MEG	

RESISTORS (cont)

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: HOFFMAN PART No.	IRC PART No.	NOTES
R67	680KΩ			BTS-680K	
R68	33KΩ			BTS-33K	
R69	270KΩ			BTS-270K	
R70	100KΩ			BTS-100K	
R71	270KΩ			BTS-270K	
R72	270Ω			BTS-270	
R73	1.8Ω			BW½-1.8	
R74	100KΩ			BTA-100K	
R75	33KΩ			BTS-33K	
R76	33KΩ			BTS-33K	
R77	15KΩ			BTS-15K	
R78	1.5Meg			BTS-1.5Meg	
R79	15KΩ	3		BTB-15K	
R80	680Ω			BTS-680Ω	
R81	390KΩ			BTS-390K	
R82	2200Ω	5%		BTS-2200 5%	
R83	220KΩ			BTS-220Ω	
R84	1800Ω			BTS-1800	
R85	1800Ω	5%		BTS-1800 5%	
R86	330Ω			BTS-330	
R87A	22KΩ			BTS-22K	
B	820Ω		*	BTS-820	
C	8200Ω			BTS-8200	
R88	4.7Meg			BTS-4.7Meg	
R89	180KΩ			BTA-180K	
R90	1000Ω			BTS-1000	
R91	1.2Meg			BTS-1.2Meg	

* Items C67A, C67B, C67C, R87A, R87B, R87C are combined in one unit.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	576VCT	5VAC	6.3VAC	5081-1					
	1.9A	300ADC	2A	2.0A	5080 ②	P9739 ①	P-3065 ②	P-8167 ①		

① Parallel and phase 6.3V windings for secondary 3.
② Tape 6.3V ③ 4.5A winding.
③ Power transformer used in chassis 411-21.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	5123A	FB41 *	BVO-9 *	230T1 *	X080 *	A-8265 *	FLY-24 *	D-34 *
T3	Vert. Output Trans.	5109A	21K01 ①	A-3034 ①	228T1 ①	V12 ①	A-8541 ①	28H10 ①	A-10433 ①
T4A	Yoke Horiz. (10MH)	5729	DF605 ②	MDF-718 ②	222DI ②	Y70F20/45 ②	DY-11A ②	T-9 ②	Y-22-1 ②
B	Vert. (35MH)								
T5	Width Coil (3.8-18MH)	5464	RF800 ③	MWC-11	212R1	30JR6 ③	WC-8 ③	WC-18 ③	WC-12 ③

① Drill new mounting hole(s).
② Remove damping capacitor from terminals 6 & 82, use original horizontal damping network if necessary.
③ Remove damping capacitor from terminals 6 & 87, use original horizontal damping network.
Refer to instructions packed with coil pertaining to horizontal damping network.
Connect horizontal damping network across terminals 82 & 87, use original horizontal damping network.
Use original horizontal damping network if necessary.
Enlarge mounting hole.
Connect to terminals 1 & 2.
Connect to coded red & blue terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
7	9	9	9	9	9	9	9
6	8	8	8	Jumper 7 & 8	8	8	8
5	NC	NC	NC	NC	NC	NC	NC
4	7	7	7	5	7	7	7
3	4	4	4	4	4	4	4
2	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1
Connect Width Coil Across	1 & 2	1 & 3	1 & 3	1 & 3	1 & 3	1 & 3	1 & 3

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	7.4KΩ	3.2Ω	5143A						① Alternate audio output trans. Use in chassis 411-21.
	CT	2.7Ω	5186 ①						

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: HOFFMAN PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5 1/4"	PM	3.2Ω	H9091-2	52A1	217S1	
SP2	6"	PM	3.5Ω	H9119-1	6A21	229S1	
SP3	6"	PM	3.5Ω	H9119-1	6A21	229S1	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	576VCT	5VAC	6.3VAC	5081-1					
	1.9A	300ADC	2A	2.0A	5080 ②	P9739 ①	P-3065 ②	P-8167 ①		

① Parallel and phase 6.3V windings for secondary 3.
② Tape 6.3V ③ 4.5A winding.
③ Power transformer used in chassis 411-21.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	5123A	FB41 *	BVO-9 *	230T1 *	X080 *	A-8265 *	FLY-24 *	D-34 *
T3	Vert. Output Trans.	5109A	21K01 ①	A-3034 ①	228T1 ①	V12 ①	A-8541 ①	28H10 ①	A-10433 ①
T4A	Yoke Horiz. (10MH)	5729	DF605 ②	MDF-718 ②	222DI ②	Y70F20/45 ②	DY-11A ②	T-9 ②	Y-22-1 ②
B	Vert. (35MH)								
T5	Width Coil (3.8-18MH)	5464	RF800 ③	MWC-11	212R1	30JR6 ③	WC-8 ③	WC-18 ③	WC-12 ③

① Drill new mounting hole(s).
② Remove damping capacitor from terminals 6 & 82, use original horizontal damping network if necessary.
③ Remove damping capacitor from terminals 6 & 87, use original horizontal damping network.
Refer to instructions packed with coil pertaining to horizontal damping network.
Connect horizontal damping network across terminals 82 & 87, use original horizontal damping network.
Use original horizontal damping network if necessary.
Enlarge mounting hole.
Connect to terminals 1 & 2.
Connect to coded red & blue terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
7	9	9	9	9	9	9	9
6	8	8	8	Jumper 7 & 8	8	8	8
5	NC	NC	NC	NC	NC	NC	NC
4	7	7	7	5	7	7	7
3	4	4	4	4	4	4	4
2	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1
Connect Width Coil Across	1 & 2	1 & 3	1 & 3	1 & 3	1 & 3	1 & 3	1 & 3

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	7.4KΩ	3.2Ω	5143A						① Alternate audio output trans. Use in chassis 411-21.
	CT	2.7Ω	5186 ①						

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: HOFFMAN PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5 1/4"	PM	3.2Ω	H9091-2	52A1	217S1	
SP2	6"	PM	3.5Ω	H9119-1	6A21	229S1	
SP3	6"	PM	3.5Ω	H9119-1	6A21	229S1	

L. F. BLANKENSHIP

HOFFMAN MODELS 21H8795 U, U1, U2, 21H8196 U, U1, U2, 21H8346 U, U1, U2, 21H8347 U, U1, U2, 21H8795, U, U1, U2, 21M1931 U, U1, U2, 21M3515 U, U1, U2, 21M3633 U, U1, U2, 21P3235, U, U1, U2, 21P3265, U, U1, U2, 21P3266, U, U1, U2, 21P3315, U, U1, U2, 21U208-5, U, U1, U2, (Ch. 411-21, 412-21)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	IF Trap	0Ω						
L2	IF Trap	0Ω						
L3	Ant. Coils	0ΩCT	0Ω					
L4	IF Trap	1Ω						
L5	Fil. Choke	0Ω						
L6	Neut. Coil	0Ω						
L7	RF, Mixer Grid, Osc. Coils	0Ω						
L8	Fil. Choke	0Ω						
L9	Feedback Coil	0Ω						
L10	RF Coil	0Ω						
L11	Conv. Plate	0Ω						
L12	39.75MC Trap	0Ω		H5241A6			6225	
L13	1st Video IF	.3ΩCT		5285A				
L14	47.25MC Trap	0Ω		H5284A-2				Tapped
L15	2nd Video IF	.1Ω	.1Ω	5538-8	17-5003 *	TV-128 *	6233 *	
L16	3rd Video IF	.1Ω	.1Ω	5538-8	17-5002 *	TV-127 *	6232 *	
L17	41.25MC Trap	0Ω		H54384			6226	
L18	4th Video IF	.1Ω	.1Ω	5538-8	17-5004	TV-125	6234	
L19	5th Video IF	.1Ω	.1Ω	5242-A6	17-5004	TV-125	6234	
L20	Series Peaking Coil	4.6Ω			19-7068 ■		6110 ■	56 Microhenries; Wound on 10Meg resistor
L21	Shunt Peaking Coil	24Ω					6156 ■	820 Microhenries; Wound on 10Meg resistor
L22	Series Peaking Coil	4Ω			19-3036 ■	TV-180 ■	6176 ■	39 Microhenries; Wound on 10Meg resistor
L23	4.5MC Trap	1.4Ω			20-1004	TV-151	1469	
L24	Shunt Peaking Coil	16Ω			19-3500 ■	TV-188	6138 ■	470 Microhenries; Wound on 10Meg resistor
L25	Sound IF	1.2Ω		H54546	20-1004	TV-151	1469	
L26	Ratio Det.	18Ω	L6ΩCT	5252A-1	17-3497	TV-115	6205	Tertiary Winding=.6Ω
L28	RF Choke	0Ω			19-1002		4606	2.3 Microhenries
L29	Crossover Choke	.1Ω						

* Detune trap.
■ Parallel with 10Meg resistor.

TRANSFORMER (HORIZ. OSC.)

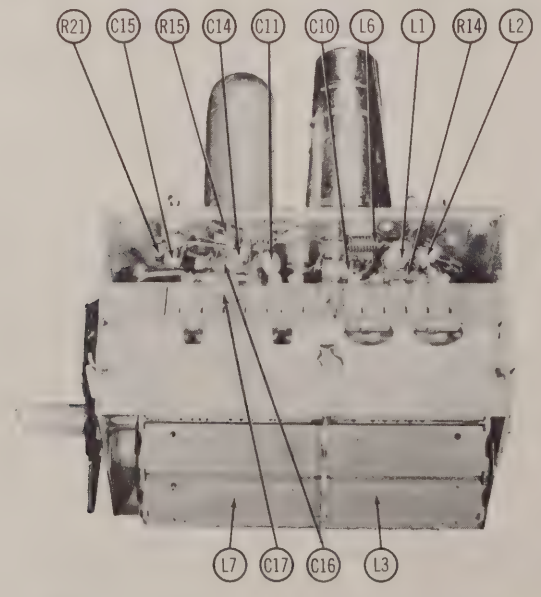
ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L27	65Ω		5236A1	19-1576	TV-163	6210	205R1	H-100	HS-3	

CRYSTAL DIODES

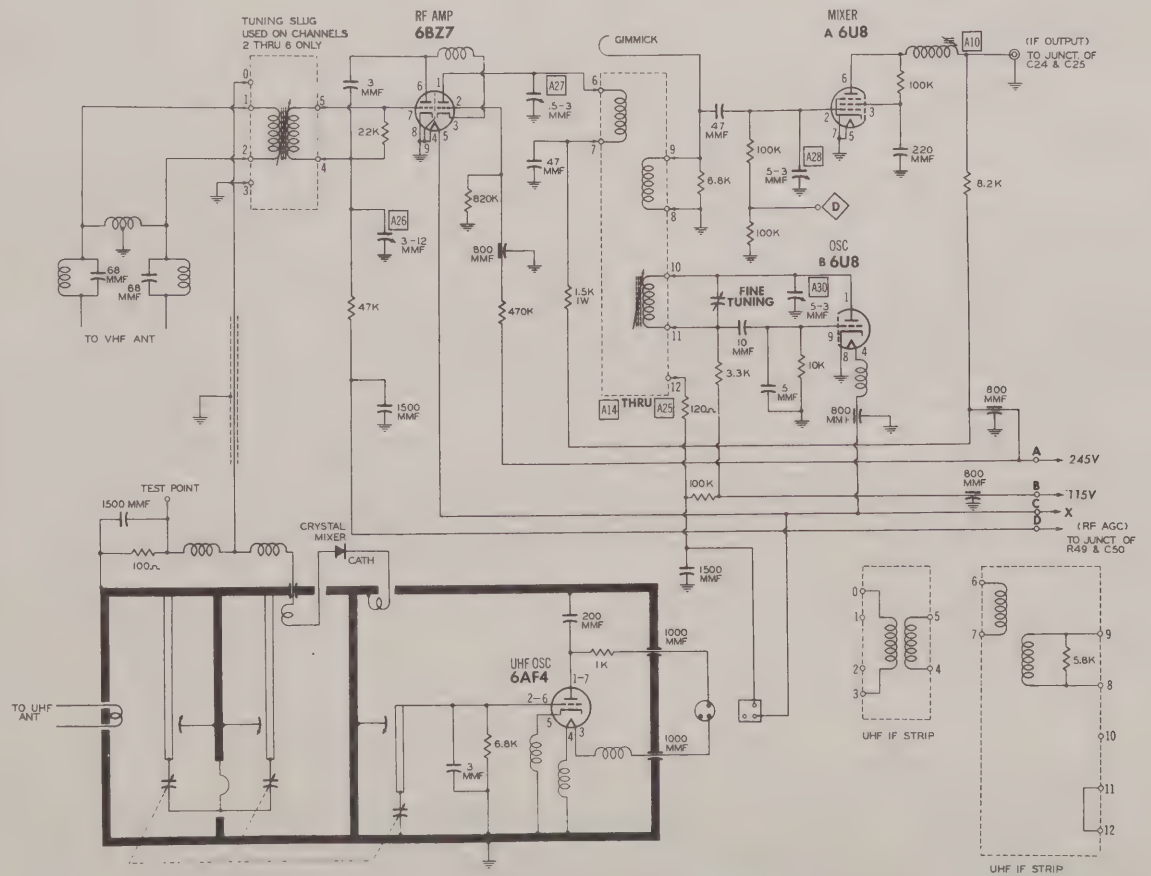
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		HOFFMAN PART No.	SYLVANIA PART No.	
M1			1N34A	AGC Clamper-Used in chassis 412-21 only.

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Dial Light		#44
M3	Tuner	9839	VHF-Chassis-411-21, 412-21
M4	Tuner	9838	VHF-UHF-Chassis 411-21U, 412-21U
	Tuner	9861	VHF-UHF-Chassis 411-21U2, 412-21U2
M5	Switch		Speaker-Head Phone-(DPDT-Slide Type)
M6	Centering Device	9722	Includes deflection yoke (T4) Rear Cover
M7	Ion Trap	9713	



RF TUNER RIGHT SIDE



UHF-VHF TUNER PART NO. 9861 USED WITH CHASSIS 411-2102 AND 412-2102

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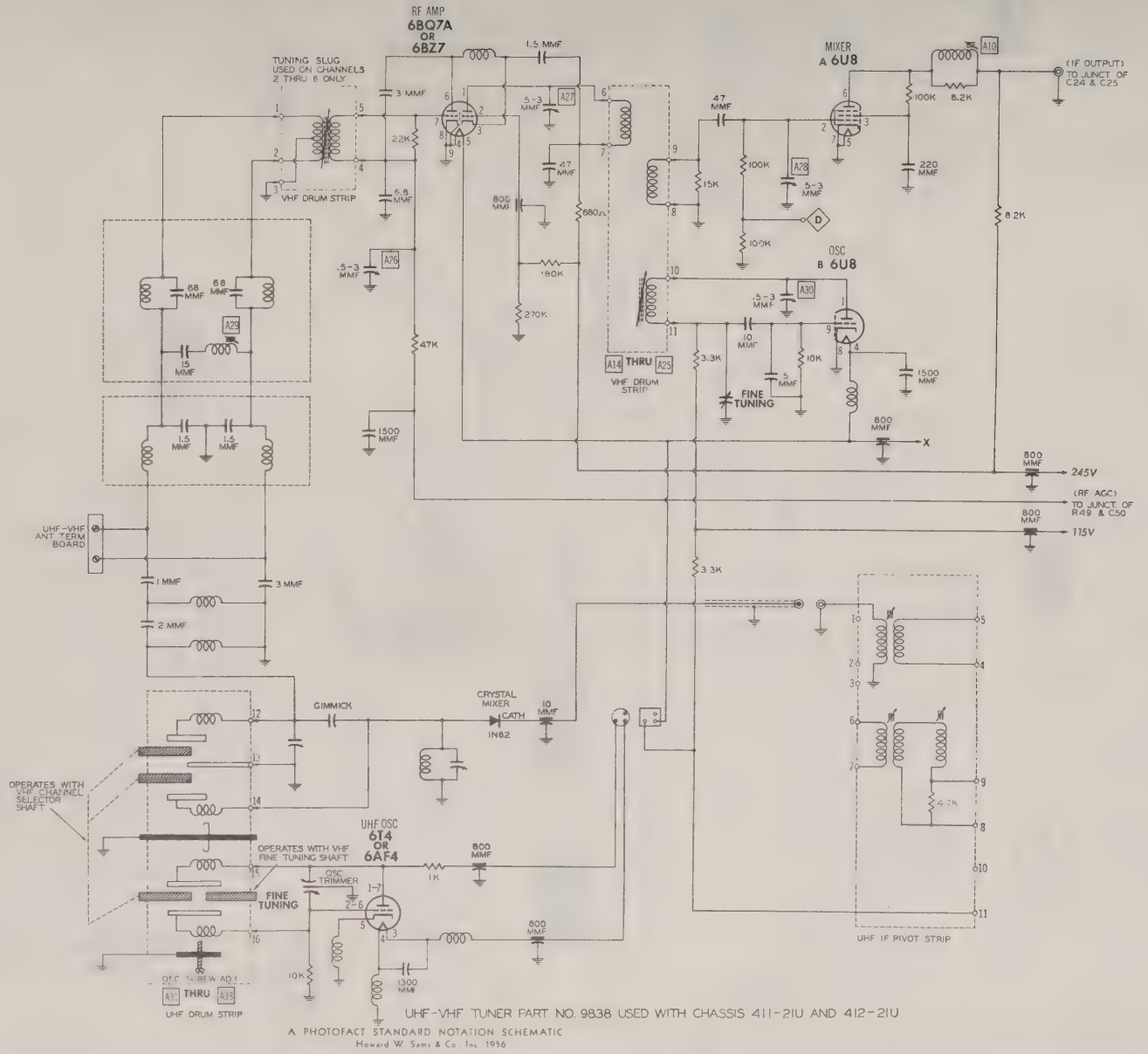
ALTERNATE UHF-VHF TUNER SCHEMATIC



UHF-VHF TUNER PART NO. 9838 USED WITH CHASSIS 411-21U AND 412-21U

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ALTERNATE VHF-UHF TUNER SCHEMATIC

PROPERTY OF
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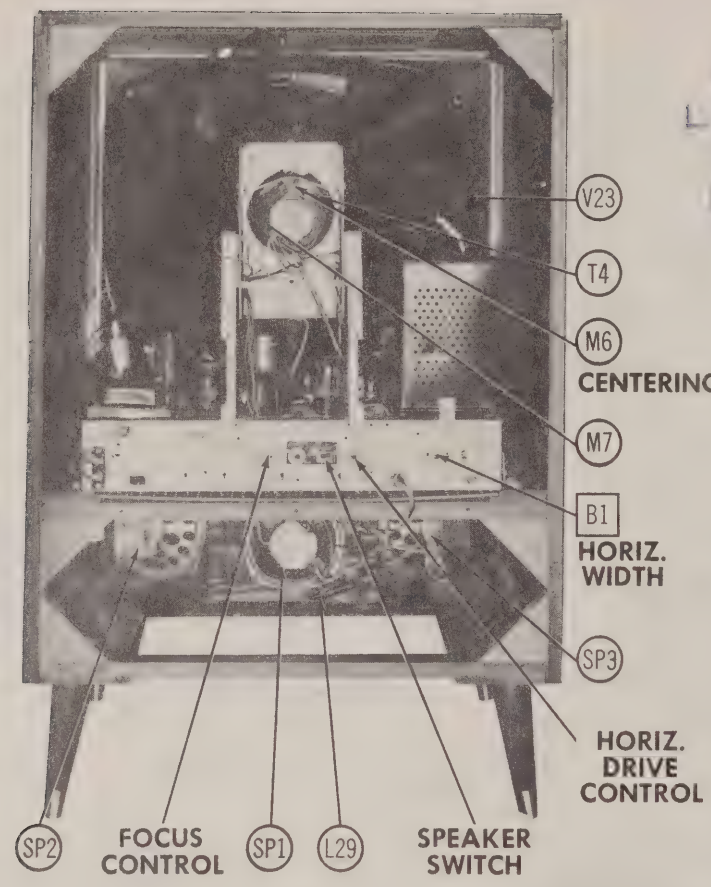
DENVER, COLORADO



CABINET—REAR VIEW

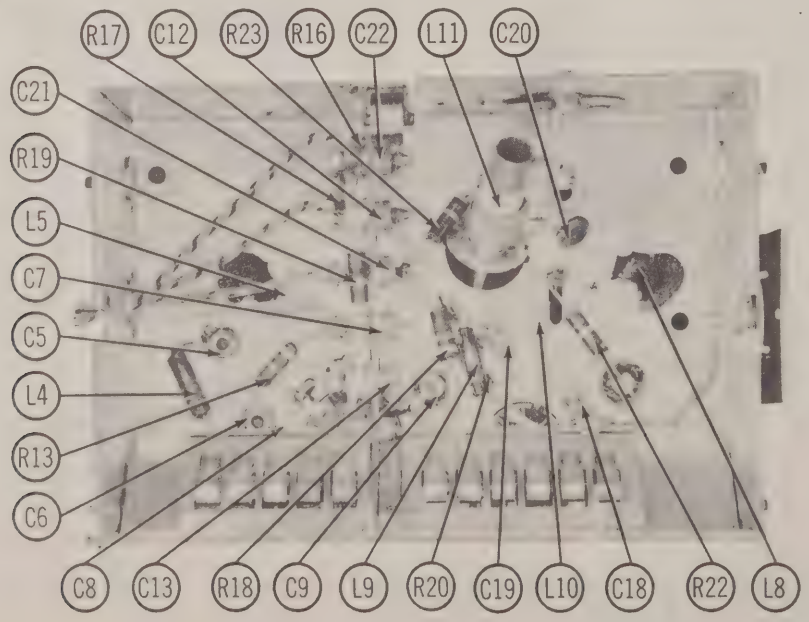
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal drive control (R11) as far clockwise as possible without the presence of a vertical white line or compression near the center of the picture.

Adjust the horizontal hold until the picture synchronizes horizontally. Switch off channel and back again, if the picture loses sync, slightly retouch the horizontal hold.

Adjust the horizontal width slug (B1) for a picture slightly wider than necessary to fill the picture mask horizontally.

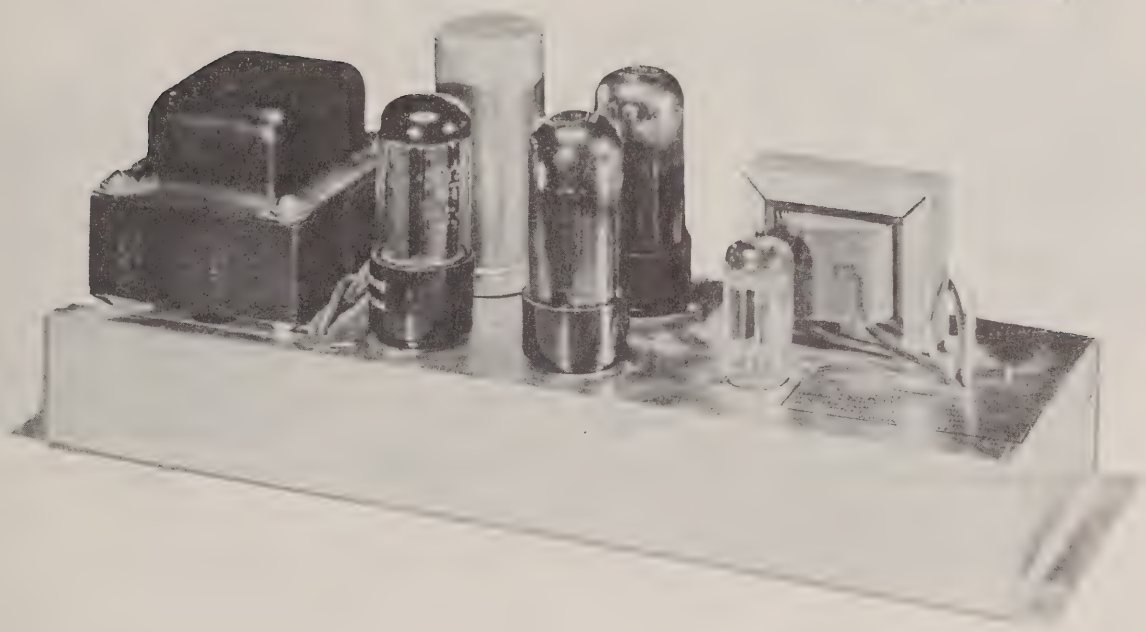


RF TUNER BOTTOM VIEW

MAGNAVOX CHASSIS AMP-138AA

PROPERTY OF
L. F. SLAPPEYSHIP
[illegible] SECOND ST.
DENVER, COLORADO

MAGNAVOX CHASSIS
AMP-138AA



MAGNAVOX CHASSIS
AMP-138AA

TRADE NAME	Magnavox Chassis Amp -138AA
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.
TYPE SET	AC Operated 10 Watt Audio Amplifier
TUBES (Four)	Types 12AX7 AF Amp. -Phase Inverter (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC- 50-60 Cycles
RATING	.54 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1956 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MAGNAVOX PART No.	STANDARD REPLACEMENT		
V1	AF Amp. - Phase Inv.	12AX7	12AX7	9A	
V2	Output	6V6GT	6V6GT	7AC	
V3	Output	6V6GT	6V6GT	7AC	
V4	Rect.	5Y3GT	5Y3GT	5T	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	270201-56	AFH4-78	DO64	FP429	TM-4022	Q-380	TVL-4734
B	■30	450							
C	▲10	450							
D	20	25							
C2	20	25	270027-2	PRS25V25	BR202	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

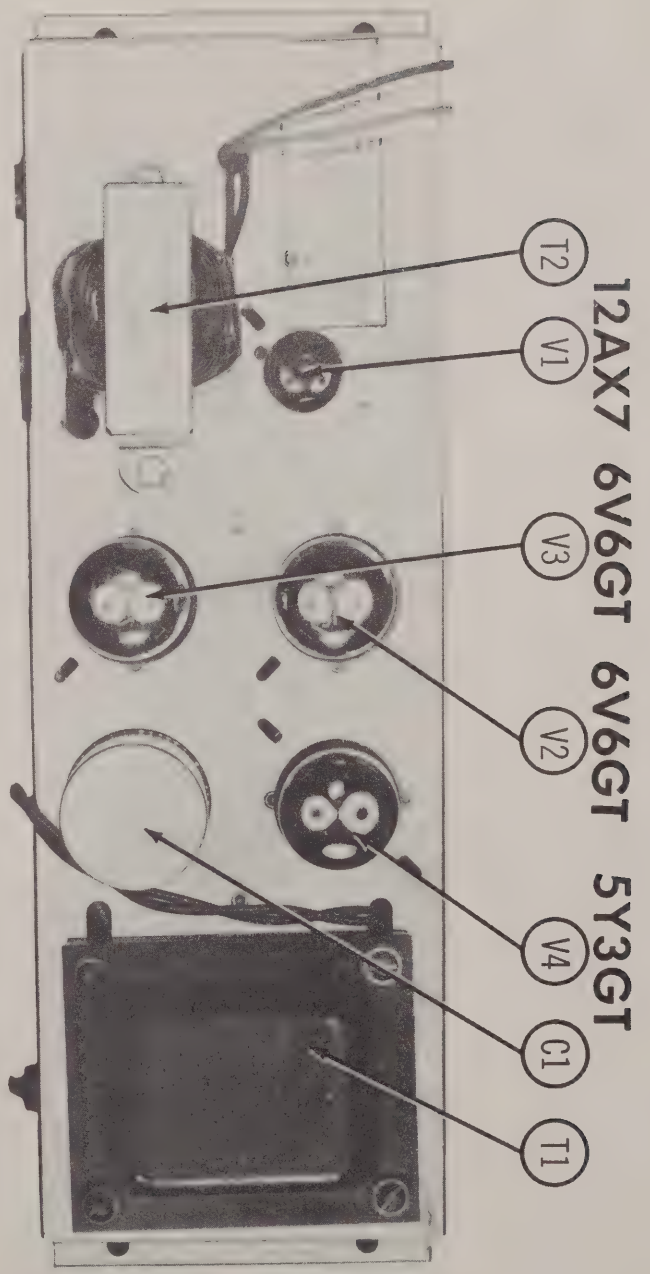
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	220		250207-48	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C4	.047	200	250201-11	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C5	.047	200	250201-11	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C6	.01	600	250201-1	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C7	10000		250219-2	BPD-01	D6-103	KO82	GP3-333-103	DC-511	5HK-S1	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R1	470K	½	230104-94	BTS-470K	
R2	47K	½	230104-82	BTS-47K	
R3	470K	½	230104-94	BTS-470K	
R4	3300Ω	½	230104-68	BTS-3300	
R5	220Ω	½	230104-54	BTS-220	
R6	15K	½	230104-76	BTS-15K	
R7	470K	½	230104-94	BTS-470K	
R8	100K	½	230104-86	BTS-100K	
R9	6800Ω	½	230104-72	BTS-6800	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAGNAVOX PART No.	IRC PART No.	
R10	220K	½	230104-90	BTS-220K	
R11	270Ω	2	230096-55	BTB-270	
R12	220K	½	230104-90	BTS-220K	
R13	2700Ω	½	230104-67	BTS-2700	
R14	470Ω	2	230096-58	BTB-470	
R15	500	10	240021-2	PW10-500	
R16	100Ω	½	230104-50	BTS-100	
R17	100Ω	½	230104-50	BTS-100	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .54A	586VCT .078ADC	5VAC @ 2A	6.3VAC @ 1.5A ②	300078-2 300078-1 ③	P9305 ①	P-3052		22R04 ①	R-9B ①

① Tape 6.3V center tap.
② Current will increase when tuner is used.
③ Alternate power trans.

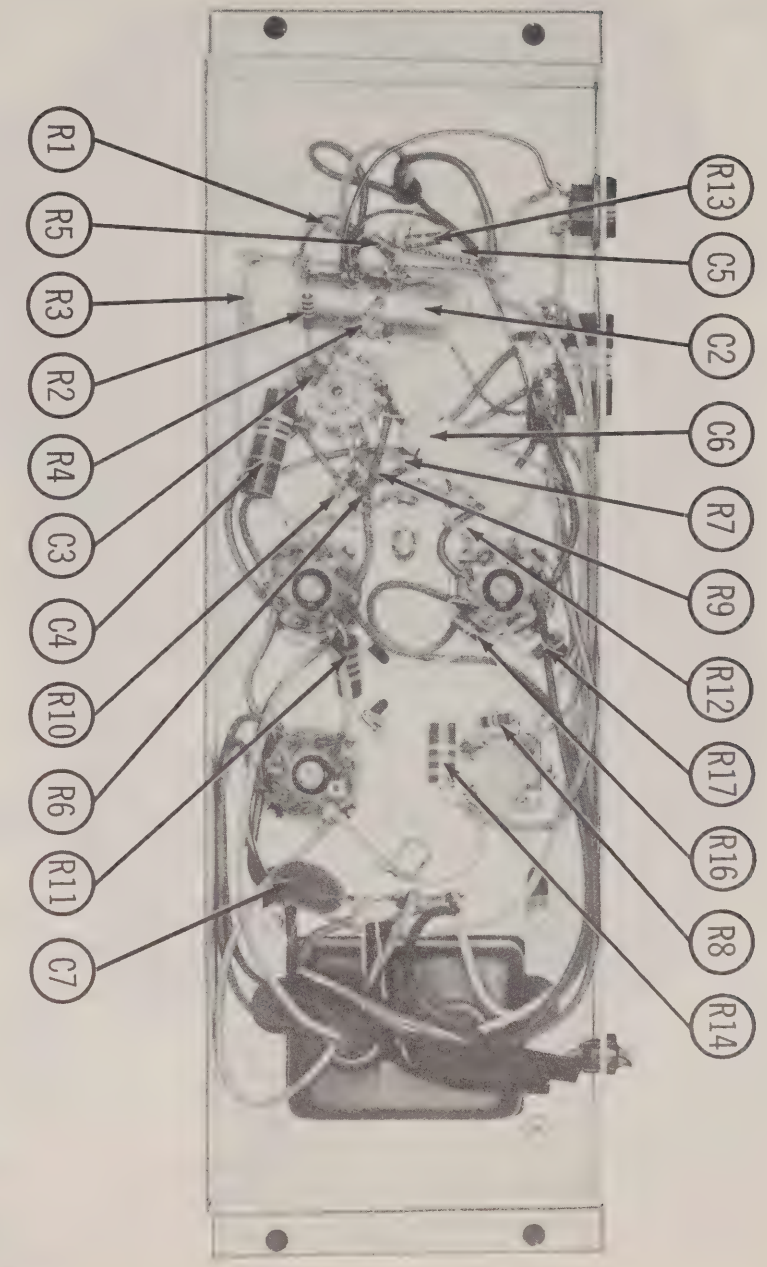
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5.9KΩ CT	3 to 4Ω	C330038-1A	Z1003 ①	A-2901 ①	A-3870	22S58	S-55X	① Drill one new mtg. hole.

MISCELLANEOUS

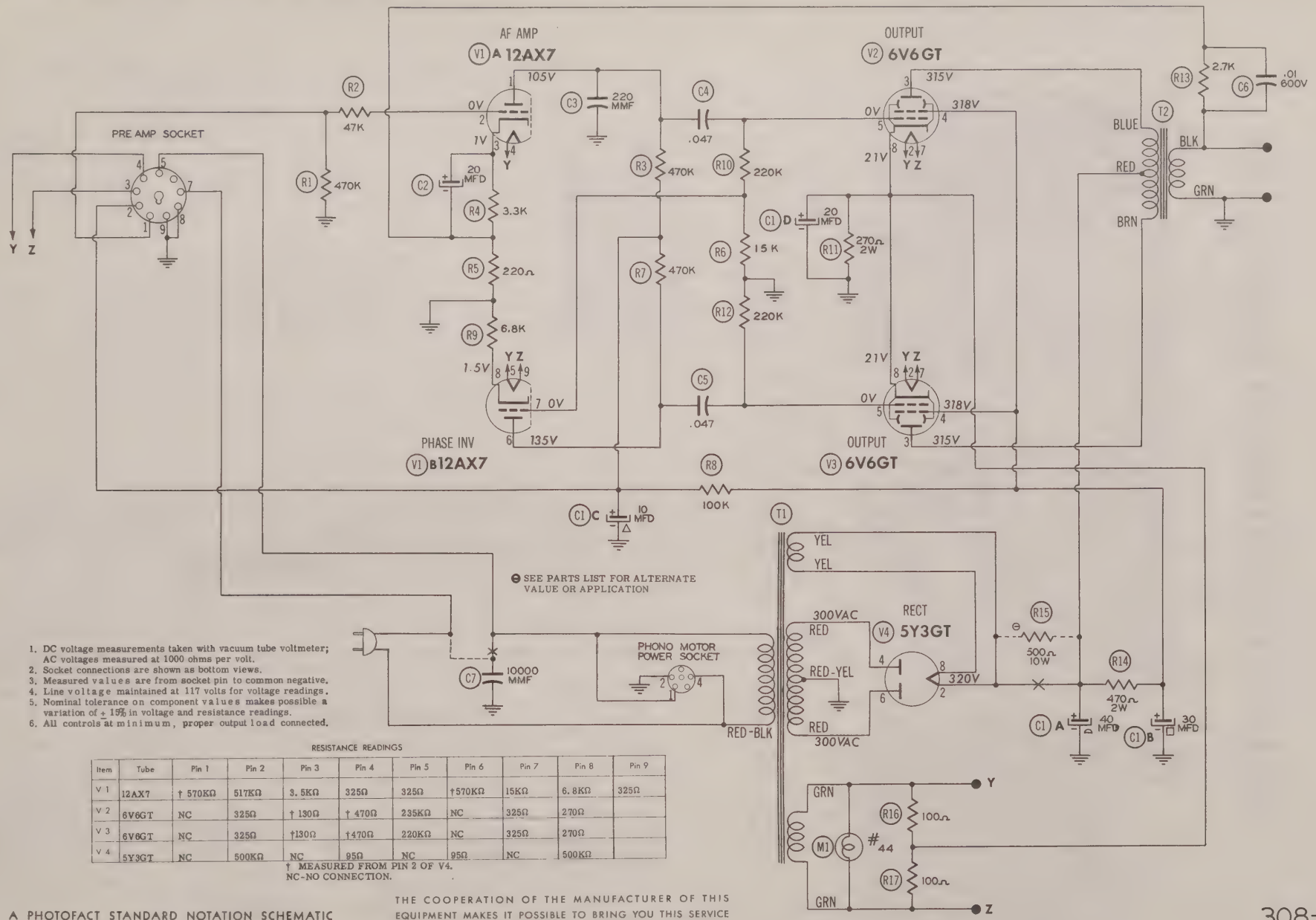
ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M1	Pilot Light		#44

CHASSIS—BOTTOM VIEW



PROPERTY OF
E. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MAGNAVOX
Chassis Amp-138AA



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	† 570KΩ	517KΩ	3.5KΩ	325Ω	325Ω	†570KΩ	15KΩ	6.8KΩ	325Ω
V 2	6V6GT	NC	325Ω	† 130Ω	† 470Ω	235KΩ	NC	325Ω	270Ω	
V 3	6V6GT	NC	325Ω	†130Ω	†470Ω	220KΩ	NC	325Ω	270Ω	
V 4	5Y3GT	NC	500KΩ	NC	95Ω	NC	95Ω	NC	500KΩ	

† MEASURED FROM PIN 2 OF V4.
NC-NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

MONITORADIO MODEL AR-4

PROPERTY OF
L. F. BLANKENSHIP
[illegible] ST
[illegible] COLORADO

MONITORADIO
MODEL AR-4

MONITORADIO
MODEL AR-4

TRADE NAME	Monitoradio Model AR-4
MANUFACTURER	Radio Apparatus Corp. 7900 Pendleton Pike, Indianapolis, Ind.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 12AT7 Mixer-Osc., 6BJ6 1st IF Amp., 6BJ6 2nd IF Amp., 12AX7 AF Amp.-Squelch Amp., 50C5 Output, 35W5 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	108MC-136MC

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to ant. terminal "1". Low side to terminal "2".	10.7MC (400~ Mod.)	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	"	"	132MC	132MC	"	A7, A8	"
3.	"	"	108MC	108MC	"	L3, L1	Check coils with tuning wand. If necessary expand or compress coil turn for maximum output. If coils are altered, repeat steps for maximum output.

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PARTS LIST AND DESCRIPTIONS

MONITORADIO
Model AR-4

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Monitoradio PART No.	STANDARD REPLACEMENT		
V1	Mixer-Osc.	12AT7	12AT7	9A	
V2	1st IF Amp.	6BJ6	6BJ6	7CM	
V3	2nd IF Amp.	6BJ6	6BJ6	7CM	
V4	AF Amp. - Squelch Amp.	12AX7	12AX7	9A	
V5	Output	50C5	50C5	7CV	
V6	Rect.	35W4	35W4	5BQ	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Monitoradio PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150		PRS150/25V50-30/20	BBRT5315C	TCT3107	TDL-532	FMT-327	TVA-3430
B	30	150							
C	20	25							
C2	2	50		SRE50V2	BBR2-50T	TC302	TD-2-50	MMT-0505	TVA-1301

FIXED CAPACITORS

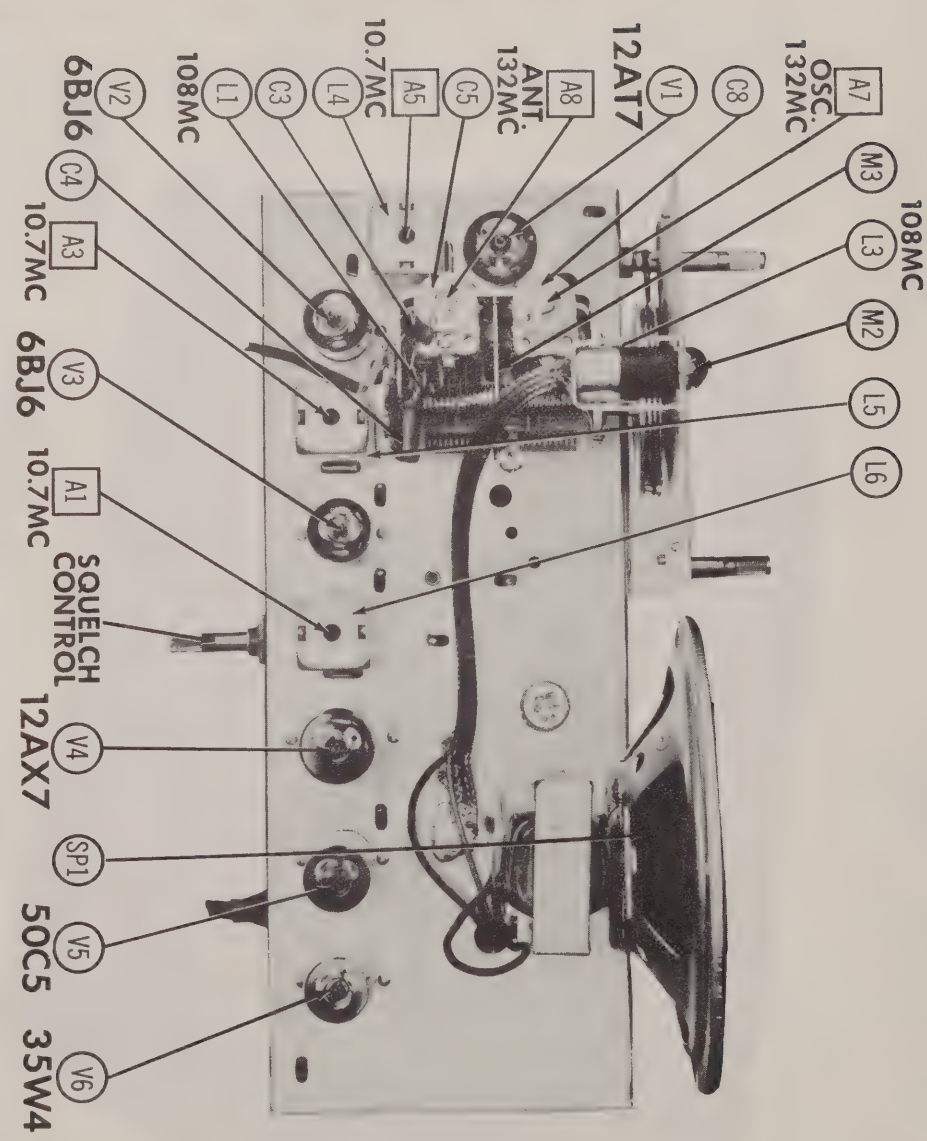
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Monitoradio PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	56		JCD-A1	SI56	D6-560	TP31	GP1K-560	UC-5446	5GA-Q56	
C4	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C5	3-13		TSA-N300							
C6	2.7		100-203							
C7	27		PQ		TCZ-27	TZ16	NPOL-270			
C8	3-13		TSA-N300							
C9	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C10	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C11	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C12	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C13	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C14	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C15	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C16	10000		JCD-C7	BPD-01	D6-103	TP67	GP3-333-103	DC511	5HK-S1	
C17	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C18	100			N750-DI100	TCN-100	NO42	N750L-101	NT-531	5TCU-T1	
C19	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C20	1000			BPD-001	DD-102	KO69	801-001	UC-521	5HK-D1	
C21	.47	100		P288N-47		CUB2P47		PT4047	2TM-P47	
C22	5000		JCD-C4	SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C23	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C24	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C25	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C26	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C27	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C28	10000		JCD-C7	BPD-01	D6-103	TP67	GP3-333-103	DC511	5HK-S1	
C29	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C30	.05	600		BPD-05	DF-503	CUB6S5		PT615	6TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Monitoradio PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250KΩ	½	100-093-6	AB-51	A47-250K-Z	Q13-130	U-44	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A.
R2A	25KΩ	½	100-093-7	AB-27	A47-25K-V	Q14-120	U-28	Squelch
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Monitoradio PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R3	10KΩ	1/2		BTS-10K	
R4	1000Ω	1/2		BTS-1000	
R5	1000Ω	1/2		BTS-1000	
R6	100KΩ	1/2		BTS-100K	
R7	470Ω	1/2		BTS-470	
R8	82Ω	1/2		BTS-82	
R9	220KΩ	1/2		BTS-220K	
R10	470Ω	1/2		BTS-470	
R11	82Ω	1/2		BTS-82	
R12	33KΩ	1/2		BTS-33K	
R13	470KΩ	1/2		BTS-470K	
R14	220KΩ	1/2		BTS-220K	
R15	2.2Meg	1/2		BTS-2.2Meg	
R16	68KΩ	1/2		BTS-68K	
R17	470KΩ	1/2		BTS-470K	
R18	1000Ω	1		BTA-1000	
R19	150Ω	1/2		BTS-150	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Monitoradio PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.4KΩ	3.9Ω	Part of spkr.	Z1102 ①	A-3031 ①	A-3330 ①	24S50A ①	S-16X ①	① Bend mtg. tabs down, file slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Monitoradio PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5"	PM	3.9Ω	750B12	5A1 ①	228S1	① Use Universal mounting bracket.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Monitoradio PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω		300-218-3				Tapped
L2	Cathode Choke	.8Ω		CLA	19-1000		4602	1 Microhenry, IRC Part No. CLA
L3	FM Osc. Coil	0Ω		300-218-1				Tapped
L4	1st FM IF	.6Ω	.6Ω	300-077-2	16-3487	FM-254	1463	
L5	2nd FM IF	.6Ω	.6Ω	300-077-2	16-3487	FM-254	1463	
L6	3rd FM IF	.6Ω	.6Ω	300-077-3	16-3487	FM-254	1463	

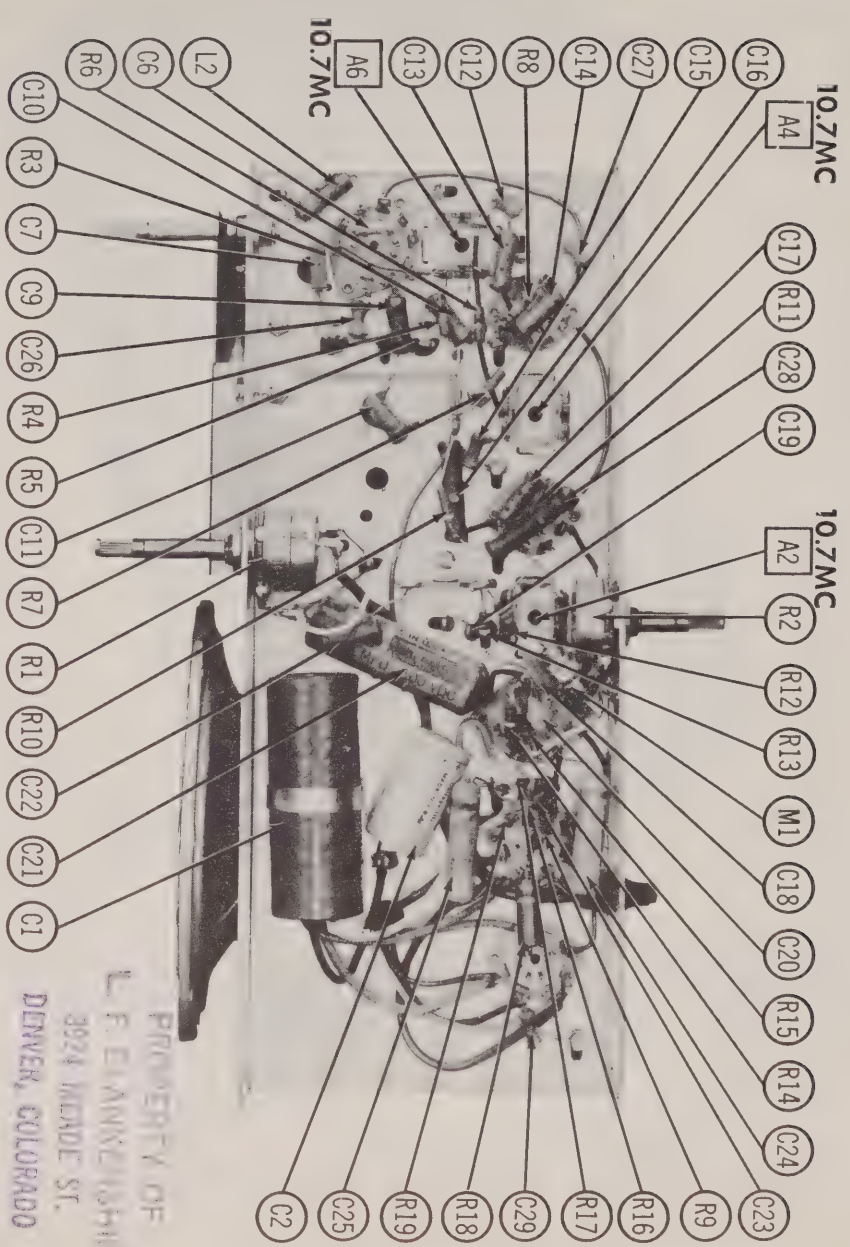
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Monitoradio PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M1	1N34	1N34	1N34	

MISCELLANEOUS

ITEM No.	PART NAME	Monitoradio PART No.	NOTES
M2	Dial Light		#51
M3	Tuning Cap.	300-060-4	2 Gang
	Cabinet	No. 29-9A	
	Knob	No. 200	Tuning & On-Off-Volume
	Knob	No. 400-P	Squelch
	Dial Window	No. 135	
	Dial Pointer	1774E	
	Dial Face	AP-10-076	

CHASSIS—BOTTOM VIEW



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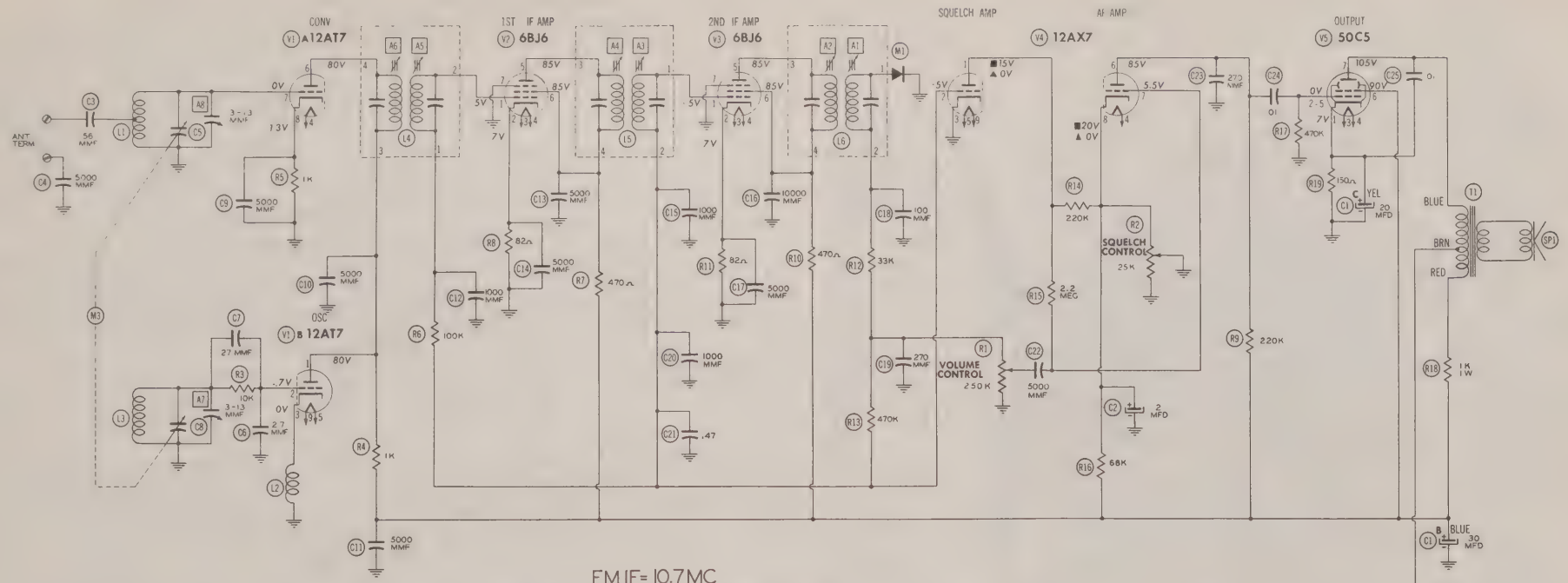
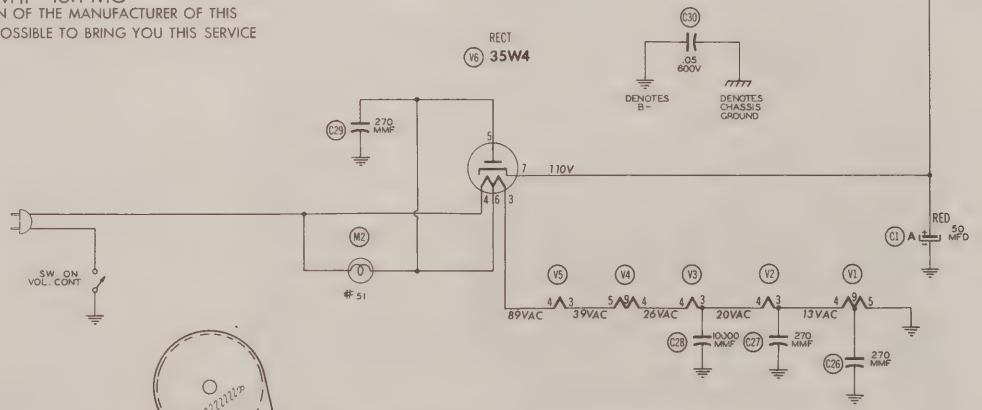
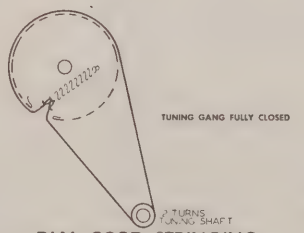




RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	† 2KΩ	10KΩ	.7Ω	12Ω	0Ω	† 2KΩ	0Ω	1KΩ	6Ω
V 2	6BJ6	820KΩ	82Ω	12Ω	18Ω	† 1.4KΩ	†1.4KΩ	0Ω		
V 3	6BJ6	720KΩ	82Ω	18Ω	24Ω	† 1.4KΩ	† 1.4KΩ	0Ω		
V 4	12AX7	† 289KΩ	720KΩ	0Ω	24Ω	36Ω	† 221KΩ	† 2.4Meg	■ 17KΩ ▲ 0Ω	30Ω
V 5	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	† 1KΩ	† 150Ω		
V 6	35W4	TP	NC	86Ω	113Ω	110Ω	110Ω	50KΩ		

† MEASURED FROM PIN 7 OF V6.
■ SQUELCH CONTROL AT EXTREME COUNTER-CLOCKWISE POSITION.
▲ SQUELCH CONTROL AT EXTREME CLOCKWISE POSITION.
TP-TIE POINT.
NC-NO CONNECTION.



DIAL CORD STRINGING

1 DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

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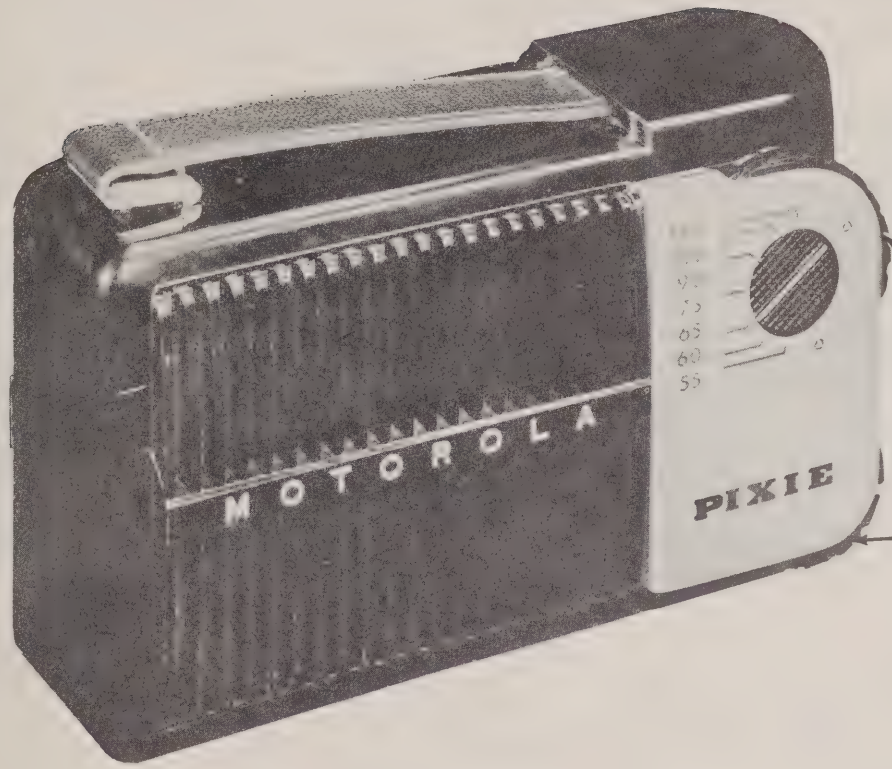

MOTOROLA MODELS
45P1, 45P2 (Ch. HS-479)

TRADE NAME	Motorola Models 45P1, 45P2 (Ch. HS-479)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Converter, 1AH4 IF Amp., 1AJ5 Det.-AVC-AF Amp., 1AG4 Output
POWER SUPPLY	1.5 Volts "A" Supply & 45 Volts "B" Supply RATING 185MA @ 1.5 Volts DC & 5.5MA @ 45 Volts DC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.	"	"	1620KC	"	"	A4	"
3.	"	"	535KC	"	"	A5	"
4.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove hex nut, at hinge end, which holds front trim plate.
2. Lift up on outer edge of trim plate to remove stud bolt from cabinet and slide toward outer edge.
3. Remove knobs and chassis bolt from under trim.
4. Lift end of chassis nearest hinge up and slide toward hinge to clear plastic brackets holding speaker and remove chassis.

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
Model 45P1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1AH4	1AH4	1AD4	
V3	Det.-AVC-AF Amp	1AJ5	1AJ5	1AJ5	
V4	Output	1AG4	1AG4	512AX	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	50	23A632945	PRS50V-10	BR105	TC32	TD-10-50	MMT-0510	TVA-1304

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.022	50	8K632940	BPD-02	DF-203	K085	817-02		5HK-S2	
C3	56		21R120872	N750-S156	TCN-56	N036	N750K-560			
C4	1500		21R120100	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C5A	150									
B	2000									
C	150		♦21B621535		♦PC-165					
D	10000									
E	5000									
C6	1500		21R120100	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	18A632934					Volume & switch (stop @ 975KΩ)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	5.6Meg	½	6R3988	BTS-5.6Meg	
R3	100KΩ	½	6R6075	BTS-100K	
R4	8.2Meg	½	6R5585	BTS-8.2Meg	

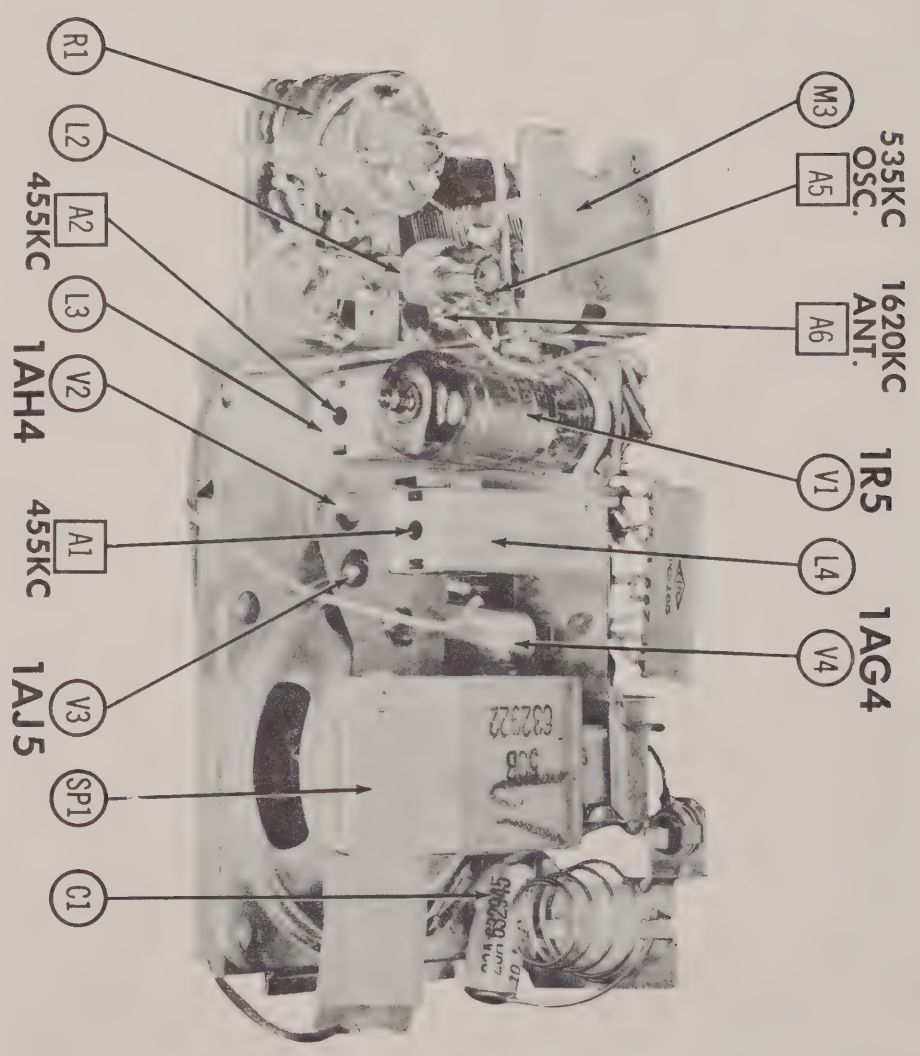
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R5A	10Meg	½	♦21B621535	BTS-10Meg	
B	4.7Meg	½		BTS-4.7Meg	
C	1Meg	½		BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	
R6	1000Ω	½	6R6229	BTS-1000	

♦ Items C5A, C5B, C5C, C5D, C5E, R5A, R5B, R5C and R5D are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	14KΩ	13.7Ω	25B632933						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	RCA TYPE No.	
SP1	2"	PM	13.7Ω	50B632922	25A07		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1.1Ω		24A632942				
L2	Osc. Coil	2Ω	7.5Ω	24B632943	14-1074	BC-394	70-OSC	
L3	Input IF	17Ω	14Ω	24K632944	16-6800		10-C1	
L4	Output IF	12Ω	17Ω	24C632939	16-6801		10-C2	

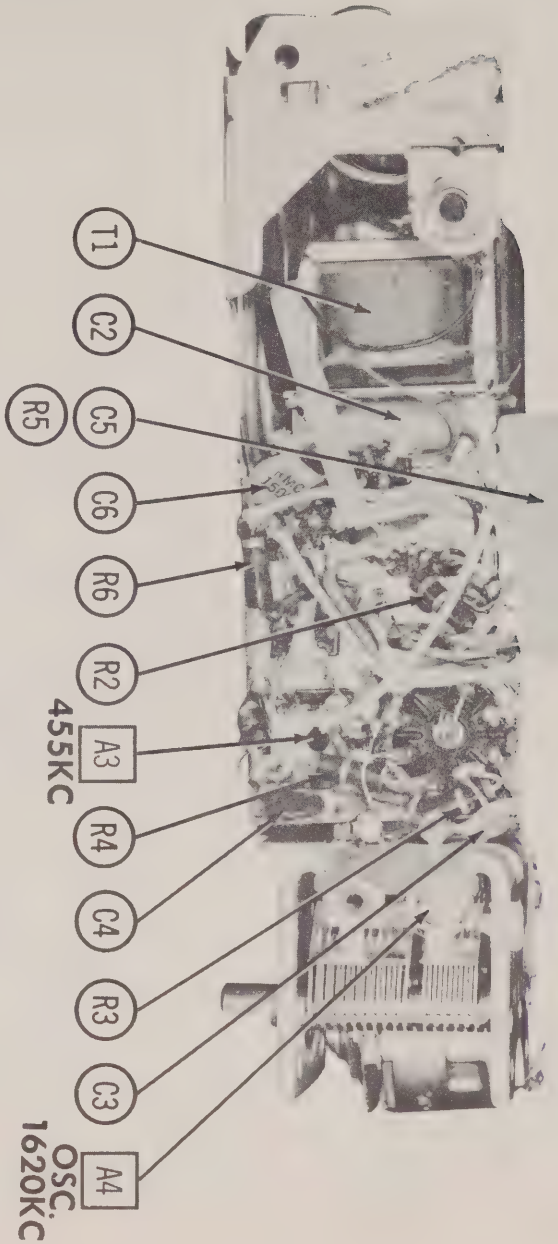
BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V "A"		635				#1		
M2	45V"B"			415			U30		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuning Cap.	19B632941	2 Gang (16-240MMF, 18-180MMF)
	Cabinet	16D633060	Less rear cover, hinge, catch, handle & escutcheon - Model 45P1
	Cabinet	16K633062	Less rear cover, hinge, catch, handle & escutcheon - Model 45P2
	Cover	15D633064	Rear - Model 45P1
	Cover	15K633065	Rear - Model 45P2
	Handle Assy.	1V633111	Model 45P1
	Handle Assy.	1V633115	Model 45P2
	Handle	55B633083	Model 45P1
	Handle	55K633084	Model 45P2
	Knob	36B633057	Tuning - Model 45P1
	Knob	36B633058	Tuning - Model 45P2
	Knob	36B633067	On-off-volume - Model 45P1
	Knob	36K633068	On-off-volume - Model 45P2

CHASSIS—BOTTOM VIEW



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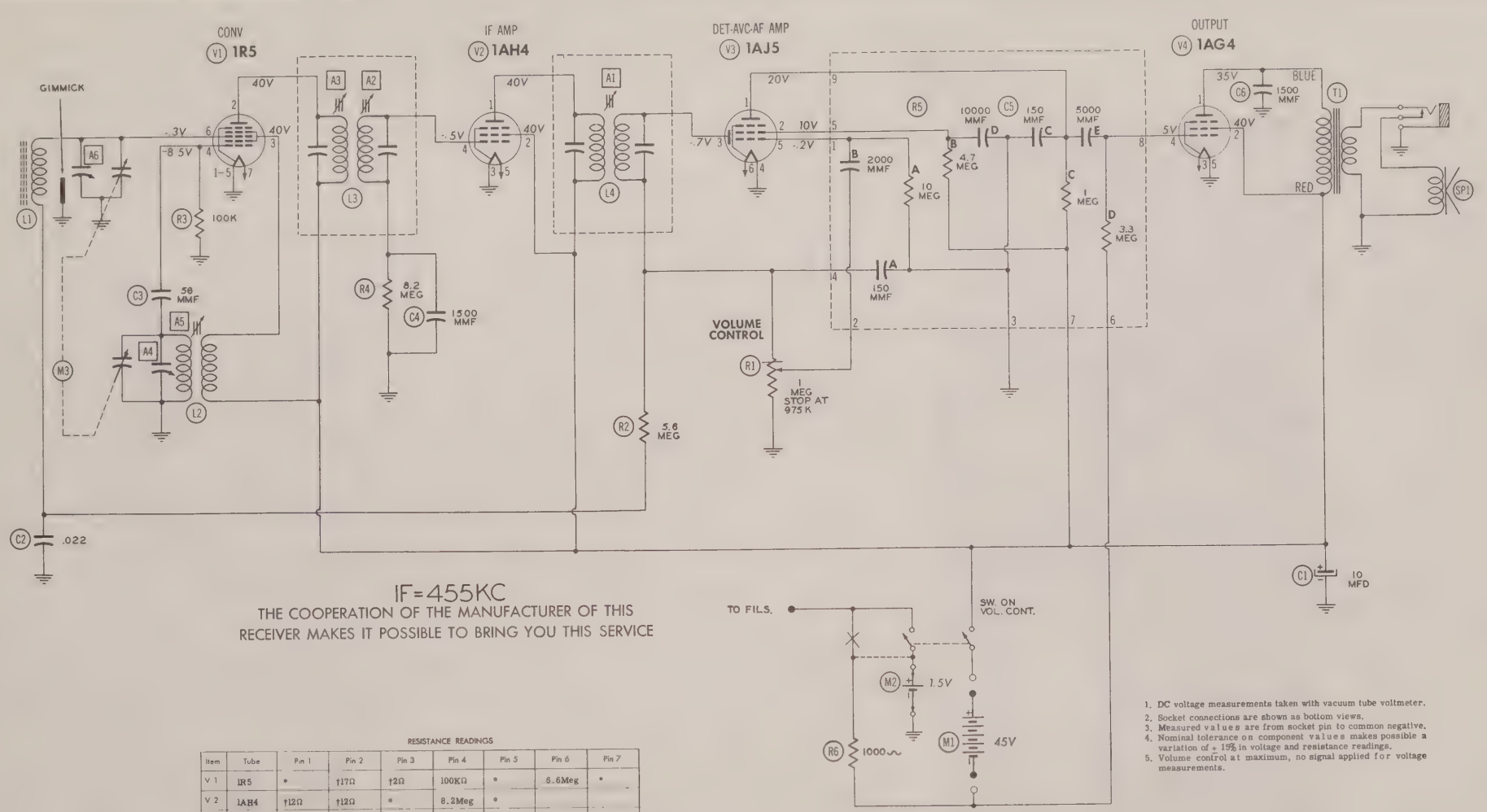

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†17Ω	†2Ω	100KΩ	*	5.6Meg	*
V 2	1AH4	†12Ω	†12Ω	*	8.2Meg	*		
V 3	1AJ5	†1Meg	†4.7Meg	1Meg	*	10Meg	*	TP
V 4	1AG4	†590Ω	75KΩ	*	3.3Meg	*		

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM POSITIVE SIDE OF C1.
TP - TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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PHONOLA
MODEL TK139T

PHONOLA
MODEL TK139T

TRADE NAME	Phonola Model TK139T
MANUFACTURER	Waters Conley Co., Rochester, Minn.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Manual Record Player
TUBES (One)	Type 50L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.26 Amp. @ 117 Volts AC

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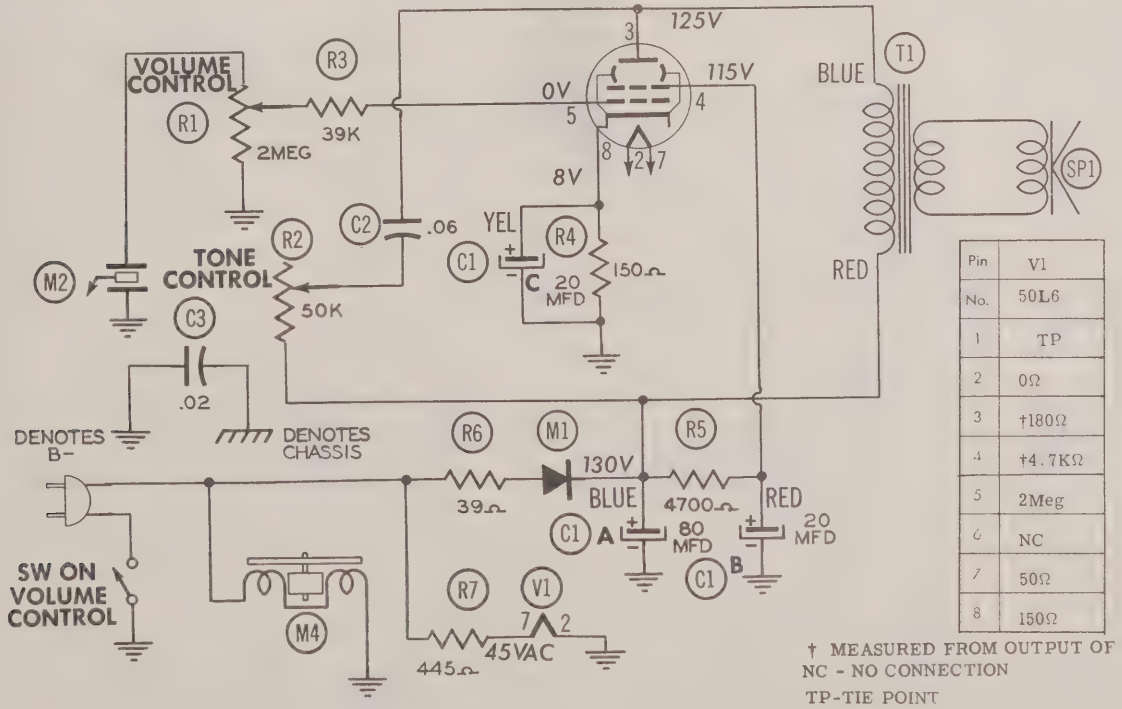
AUDIO OUTPUT
(V1) 50L6GT



Pin No.	V1 50L6
1	TP
2	0Ω
3	†180Ω
4	†4.7KΩ
5	2Meg
6	NC
7	50Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1
NC - NO CONNECTION
TP-TIE POINT

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: PHONOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Output	50L6GT	50L6GT	7S	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	10427	PRS150V80-40-20	BBRT8415C	3N538	TDL-804020-150	FMT-333	TVA-3455
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	PHONOLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.06	200	10502	P288N-06		PJ2S6		PT416	2TM-S6	
C3	.02	200	10497	BPD-02	DD-203	PJ2S2	817-02	PT412	2TM-S2	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	PHONOLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	1/2	10496	AB-76	A47-2Meg-Z	Q13-139	U-55	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A.
R2A	50KΩ	1/2	10510	AB-32	A47-50K-Z	Q13-123	U-33	Tone
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	PHONOLA PART No.	IRC PART No.	NOTES
R3	39KΩ	1/2	9144	BTS-39K	
R4	150Ω	2	9897	BTS-150	
R5	4700Ω	1/2	10429	BTS-4700	

ITEM No.	RATING: OHMS	RATING: WATT	PHONOLA PART No.	IRC PART No.	NOTES
R6	39Ω	1/2	10428	BTS-39	
R7	445Ω 5%	15	10585		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	PHONOLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.3KΩ	3.3Ω	Part of spkr.	Z1101	A-3025	A-3332	24S50 ①	S-12X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	PHONOLA PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4"	PM	3.3Ω	10526	4A07	223S1	

SELENIUM RECTIFIER

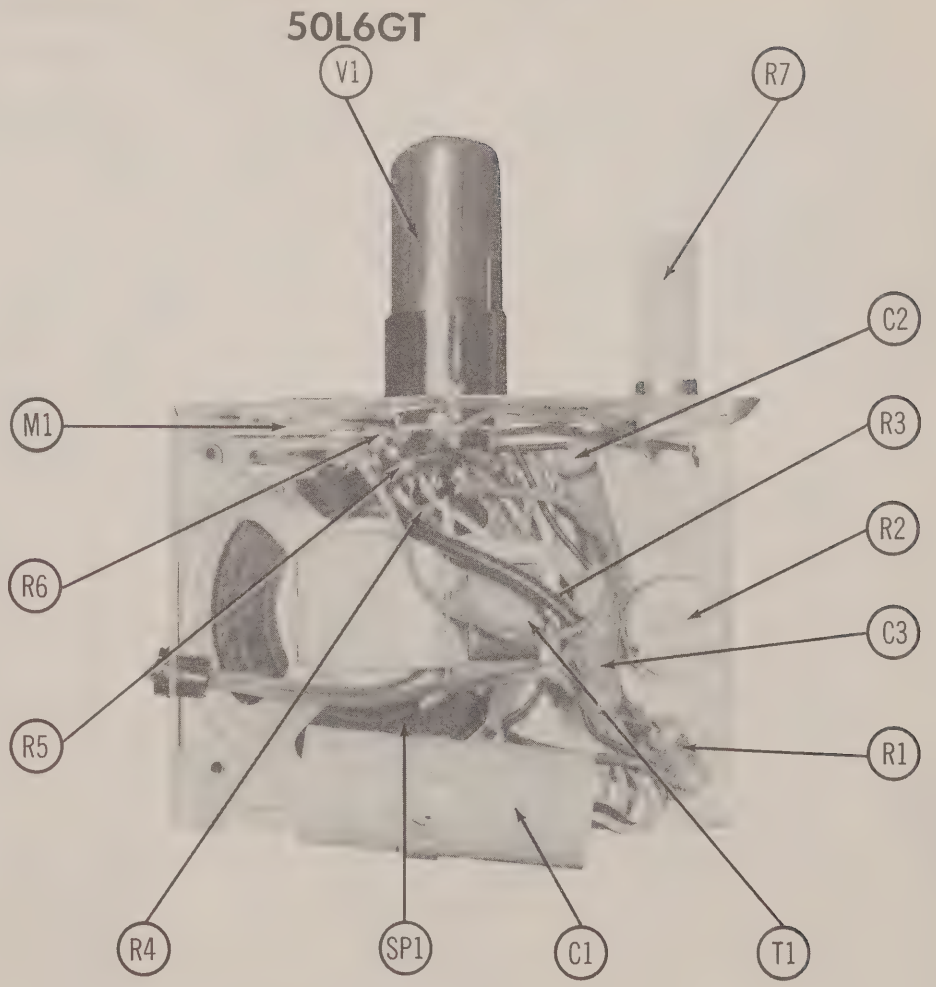
ITEM No.	RATING: CURRENT	PHONOLA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.058A	10432	1263A	RS65	6S65	5M4	65	

PHONO CARTRIDGE

ITEM No.	PHONOLA PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M2		L-29 * P-29		H-60 * 24H60		* Complete tone arm and cartridge assy.

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	PHONOLA PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3		* J-752	† A-311 or ♦ A-311D		* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	PHONOLA PART No.	NOTES
M4	Motor	10932	

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RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6255, U, 21-T-6256, U, 21-T-6257, U (Ch. KCS96, A, B, C, D, E)

RCA VICTOR MODEL 21-T-6082 U

TRADE NAME	RCA VICTOR	MODELS	CHASSIS	TUNER
		21-T-6082, 21-T-6083	KCS96	KRK22F
		21-T-6082U, 21-T-6083U	KCS96A	KRK30F
		21-T-6114, 21-T-6115, 21-T-6117	KCS96B	KRK22F
		21-T-6114U, 21-T-6115U, 21-T-6117U	KCS96C	KRK30F
		21-T-6225, 21-T-6227, 21-T-6255, 21-T-6256, 21-T-6257	KCS96D	KRK22F
		21-T-6225U, 21-T-6227U, 21-T-6255U, 21-T-6256U, 21-T-6257U	KCS96E	KRK30F

MANUFACTURER Radio Corporation of America, RCA Victor Television Division, Camden, N. J.
TYPE SET Television Receiver
TUBES Twenty
POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.74 Amp. @ 117 Volts AC
TUNING RANGE- Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions ..... 5 thru 8
Drive Cord Stringing (UHF) 8
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 21
Parts List and Descriptions ..... 13 thru 16
Photographs
Cabinet-Rear View 21
Capacitor Identification 3, 10
Chassis-Top View 17
RF Tuner 19, 20
Photographs (Cont)
Resistor Identification 4, 9
Trans., Inductor & Alignment Identification 17
Resistance Measurements 18
Servicing in the Field 1
Schematic (Alternate Tuner) 12
Schematic (TV) 2
Tube Failure Check Chart 11
Tube Placement Chart (Bottom View) 18
Tube Placement Chart (Top View) 11

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DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from top panel of cabinet.

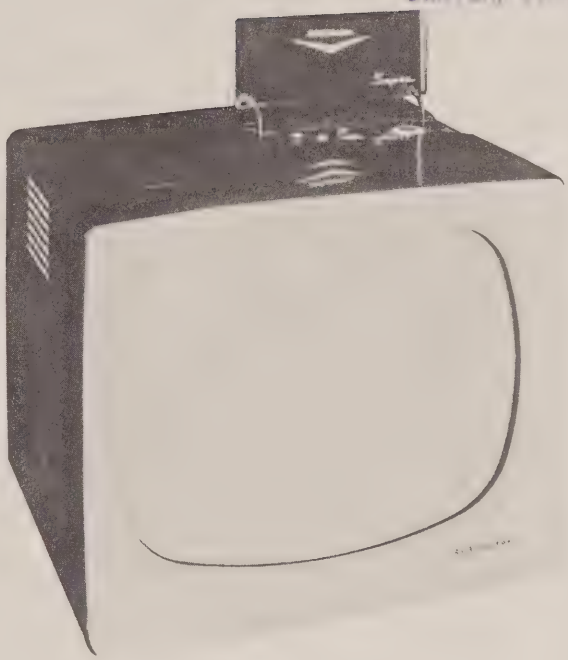
2. Remove 5 cabinet back fasteners. Remove rear cover.

3. Disconnect speaker leads, picture tube socket and HV leads.

4. Remove ion trap.

5. Remove 2 chassis bolts from bottom of cabinet and 1 metal screw from cabinet brace. Remove chassis.

6. Remove 4 speaker nuts. Remove speaker.



CHASSIS
KCS96, KCS96A, KCS96B,
KCS96C, KCS96D, KCS96E

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 11.

SPECIAL ADJUSTMENTS

A. AGC and Sync Stability Control Adjustment

While receiving the strongest signal in that area, switch off channel, then back again. If the picture shows sign of pulling or overloading, set the sync stability control (R4) maximum counter clockwise. Turn the AGC control (R5) clockwise slowly until a slight bend is noted in picture, then back until picture appears stable.
Turn the horizontal hold control as far counter clockwise as possible without making horizontal sync unstable. Then turn R4 clockwise until a slight bend is noted in picture, then back counter clockwise until bend disappears. Return horizontal hold adjustment to its center hold range position.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal hold control (L53) is located on the top control panel of the chassis and is used as horizontal hold adjustment. If horizontal sync cannot be brought in by adjusting the horizontal hold, set it at approximately its mid-range position and synchronize the picture by adjusting the horizontal waveform slug (B1).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A49) located on top of chassis.

FUSES

One fuse is used for horizontal and vertical sweep circuit protection. (For location see tube placement chart)

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6255, U, 21-T-6256, U, 21-T-6257, U (Ch. KCS96, A, B, C, D, E)

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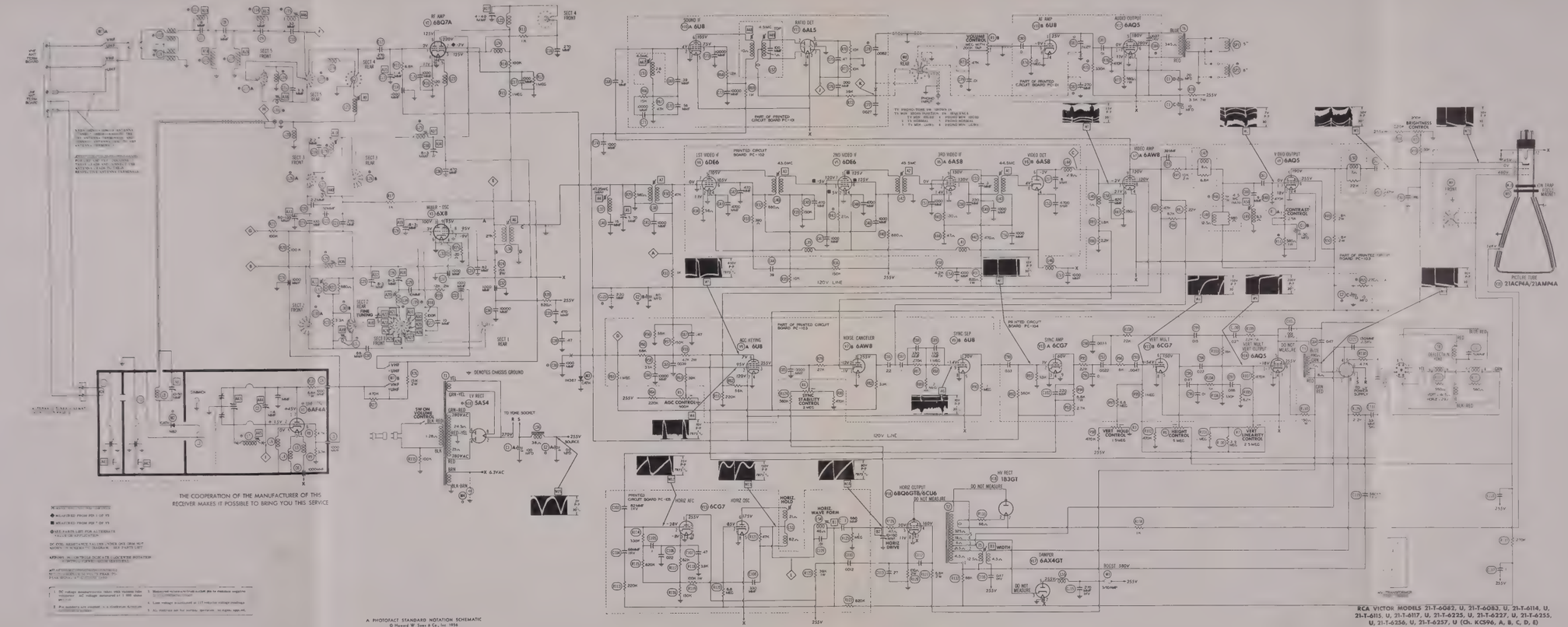

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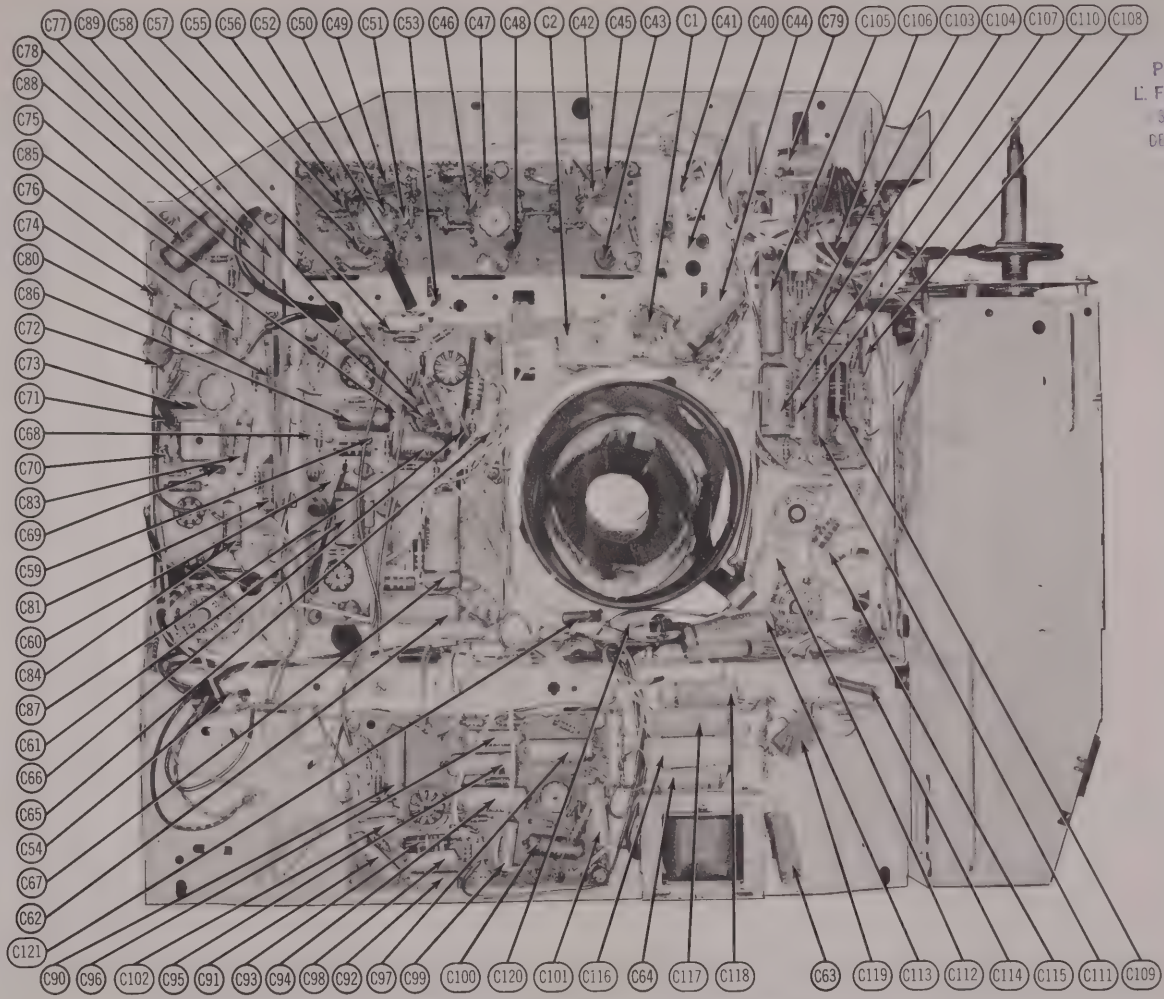
RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6255, U, 21-T-6256, U, 21-T-6257, U (Ch. KC596, A, B, C, D, E)

RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6255, U, 21-T-6256, U, 21-T-6257, U (Ch. KC596, A, B, C, D, E)



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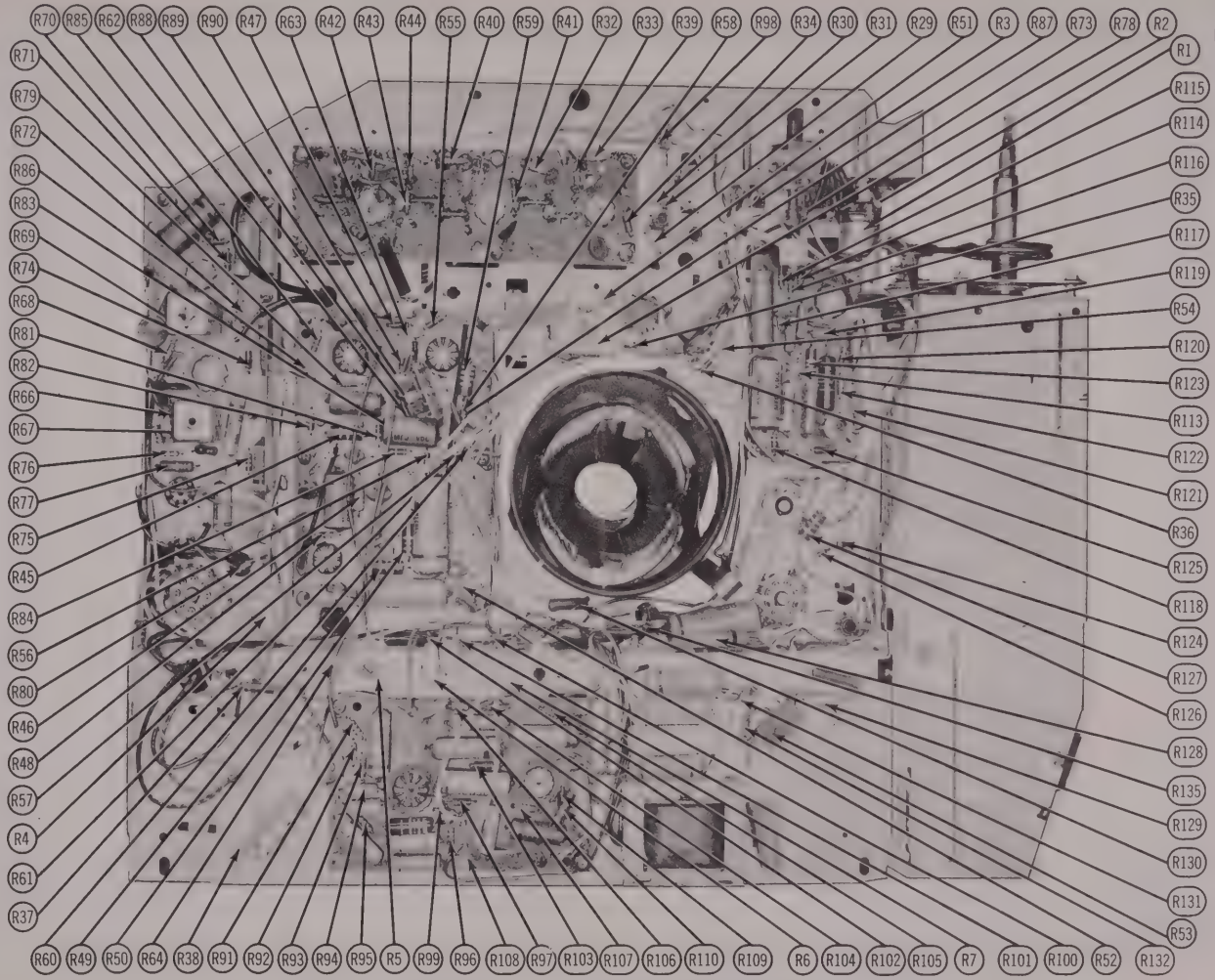
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U, 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6235, U, 21-T-6236, U, 21-T-6237, U (Ch. KCS90, A, B, C, D, E)



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from chassis. The horizontal oscillator tube (V15) may be removed to eliminate the high voltage shock hazard. If V15 is removed during alignment, connect the negative lead of a 20 volt bias supply to pin 2 (grid) of noise canceller tube (V7). Connect positive lead to chassis. Set the AGC control (R5) to its maximum clockwise position.

VIDEO IF ALIGNMENT FOR VHF MODELS 21-T-6082 THRU 21-T-6257

Set the AGC control (R5) to its maximum clockwise position. Set the sync stability control (R4) to its maximum counterclockwise position. Connect the negative lead of a variable bias supply to point Ⓐ. Positive lead to chassis. Set for -5 volts bias at point Ⓐ. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.0015MFD Ceramic capacitor	High side to point Ⓑ. Low side to chassis.	Not used	44.5MC	Any unused channel	Use VTVM. DC probe to point Ⓒ. Common to chassis.	A1	Attenuate generator output to maintain not more than 3 volts on VTVM. Adjust for maximum deflection.
2.	"	"	"	45.5MC	"	"	A2	"
3.	"	"	"	43.0MC	"	"	A3	"
4.	"	"	"	47.25MC	"	"	A4	Increase generator output to maintain 3 volts on VTVM. Adjust for MINIMUM deflection.
5.	"	High side to point Ⓑ. Low side to tuner chassis.	44MC (10MC Swp)	42.5MC 45.75MC	4	Vert. Amp. of scope thru detector (Fig.1) to pin 5 (plate) of 1st.Video IF Amp. tube (6DE6). Low side to chassis.	A5, A6, A7	Adjust for -5 volts bias at point Ⓐ. Clip a 330Ω resistor from pin 2 (grid) of 3rd. video IF amplifier tube (6AS8) to chassis. Connect a 180Ω carbon resistor from plate to screen (pin 5 and 6) of 1st. video IF amplifier tube (6DE6). Preset A5 (trimmer) to minimum capacity. If a separate signal generator is used for a marker, couple it loosely to detector as in Fig. 1. Attenuate output of sweep generator to give .3 to .5 volts peak to peak on scope. Adjust A6 and A7 for maximum gain with 45.75MC marker at 75% of maximum response as in Fig. 2. Adjust A5 to place 42.5MC marker at 70% response on curve as in Fig. 2. Disconnect the 180Ω and 330Ω resistors. Remove scope and detector from pin 5 of first video IF amplifier tube (6DE6).
6.	"	"	"	42.5MC 45.0MC 45.75MC	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A1, A2, A3	Attenuate output of sweep generator to obtain 3 to 5 volts peak to peak on scope. If a separate signal generator is used for a marker, couple it loosely to pin 1 (grid) of 1st. video IF amplifier tube (6DE6). Retouch A1, A2 and A3, if necessary to obtain response curve similar to Fig. 3.
7.	"	"	"	41.25MC	"	"	A1, A3	Increase sweep generator output ten times and notice attenuation at 41.25MC. Adjust A1 and A3 to set 41.25MC marker at approximately 30 times down with response curve as in Fig. 3.
8.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	"	42.5MC 45.0MC 45.75MC	All VHF channels separately	"	A1, A2	Couple marker generator loosely to first video IF amplifier tube grid. Connect negative lead of second bias supply to point Ⓓ. Positive lead to chassis. Adjust for -3 volts bias at point Ⓓ. SLIGHTLY retouch A1 and A2 to correct any overall tilt that is approximately the same on all VHF channels. Continue alignment with step 12.

VIDEO IF ALIGNMENT FOR VHF-UHF MODELS 21-T-6082U THRU 21-T-6257U

Same instructions as under "Video IF Alignment For Models 21-T-6082 thru 21-T-6257".

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.015MFD Ceramic Capacitor	High side to point Ⓑ. Low side to chassis.	Not used	44.5MC	Any unused channel	Use VTVM. DC probe to point Ⓒ. Common to chassis.	A1	Attenuate generator output to maintain not more than 3 volts on VTVM. Adjust for maximum deflection.
2.	"	"	"	45.5MC	"	"	A2	"
3.	"	"	"	43.0MC	"	"	A3	"
4.	"	"	"	47.25MC	"	"	A4	Increase generator output to maintain 3 volts on VTVM. Adjust for MINIMUM deflection.
5.	"	High side to point Ⓑ. Low side to tuner chassis.	44MC (10MC Swp)	42.5MC 45.75MC	4	Vert. Amp. of scope thru detector (Fig.1) to pin 5 (plate) of 1st. video IF amplifier tube (V4). Low side to chassis.	A5, A6, A7	Adjust bias to read -5 volts at point Ⓐ. Clip a 330Ω resistor from pin 2 (grid) of 3rd. video IF amp. tube (V6A) to chassis. Connect a 180Ω carbon resistor from plate to screen (pins 5 and 6) of 1st. video IF amp. tube (V4). Preset A5 to minimum capacity. If a separate signal generator is used for marker, couple it loosely to detector as in Fig. 1. Attenuate output of sweep generator to give .3 to .5 volts peak to peak on scope. Adjust A6 and A7 for maximum gain with 45.75MC marker at 75% of maximum response as in Fig. 2. Adjust A5 to place 42.5MC marker at 70% response on curve as in Fig.2. Disconnect 180Ω and 330Ω resistors. Remove scope and detector from pin 5 of V4.
6.	"	"	"	42.5MC 45.0MC 45.75MC	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A1, A2, A3	Attenuate output of sweep generator to obtain 3 to 5 volts peak to peak on scope. If a separate signal generator is used for a marker, couple it loosely to pin 1 (grid) of first video IF amplifier tube (6DE6). Retouch A1, A2 and A3 if necessary to obtain response curve similar to Fig. 3.

VIDEO IF ALIGNMENT FOR VHF-UHF MODELS 21-T-6082U THRU 21-T-6525U (Cont)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	0013MFD Ceramic Capacitor	High side to point Ⓐ. Low side to tuner chassis.	44MC (10MC Swp.)	41.25MC	4	Vert. Amp. to point Ⓒ. Low side to chassis.	A1, A3	Increase sweep generator output ten times and notice attenuation at 41.25MC. Adjust A1 and A3 to set 41.25MC marker 30 times down with response curve as in Fig. 3.
8.	1000Ω Carbon Resistor in series with .001MFD Ceramic Capacitor	High side of sweep generator to front terminal of 1N82 crystal holder. Low side to tuner case. Use very short leads.	797MC (20MC Swp)	43.5MC 45.75MC	Between channels 6& & 69	Vert. Amp. thru detector (Fig.1) to junction of 220Ω and .0015MFD (see remarks). Low side to chassis.	A9, A9	Set tuner to UHF position. Connect a 220Ω carbon resistor in series with .0015MFD ceramic capacitor between pin 1 (plate) of 6BQ7A and chassis with the capacitor end connected to pin 1 of 6BQ7A and resistor end to chassis. If separate marker generator is used, couple it loosely to detector (Fig. 1). Connect a second bias supply to point Ⓓ. Positive side to chassis of tuner. Adjust for -3 volts at point Ⓓ. Attenuate sweep generator for .5 volts peak to peak on scope. Adjust A8 and A9 for maximum gain as with response as in Fig. 4.
9.	"	High side to front terminal of 1N83 crystal holder. Low side to tuner case. Use very short leads.	"	"	"	Vert. Amp. thru detector (Fig.1) to point E. Low side to chassis.	A10, A11	Tuner in UHF position. Loosely couple marker generator to detector (Fig.1). If necessary, adjust A10 and A11 to place 45.75MC marker at peak of curve with minimum tilt. Remove 220Ω resistor and .0015MFD capacitor from pin 1 of 6BQ7A tube. Remove detector and scope from point Ⓔ.
10.	Two 130Ω Carbon Resistors	Across antenna (VHF) terminals with 130Ω in each lead.	44MC (20MC Swp)	42.5MC 45.0MC 45.75MC	All VHF channels separately	Vert. Amp. to point Ⓒ. Low side to chassis.	A1, A2	Couple marker generator loosely to first video IF amplifier grid. Check for response curve similar to Fig. 3 on all VHF channels. SLIGHTLY retouch A1 and A2 if necessary to correct for any overall tilt.
11.	300Ω Pad (Fig. 5)	Across UHF antenna terminals thru 300Ω pad (Fig. 5).	See Freq. chart of UHF channels	"	Check all UHF channels	"	A10, A11	Couple marker generator loosely to first video IF amplifier grid. Check for response similar to Fig. 3 on all UHF channels. If necessary, SLIGHTLY retouch A10 and A11 to correct for any overall tilt. Do not retouch A1, A3, A5, A6, A7, A8 or A9 in this step. Remove all test equipment. Disconnect both bias supplies.

KRK22F OR KRK30F ANTENNA MATCHING UNIT ALIGNMENT

The antenna matching unit has been properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place.
If a new antenna unit is installed, the RF unit should be realigned. Alignment should not be attempted without the proper alignment facilities. The FM trap adjustment (A46) which is located on the antenna matching unit may be adjusted without seriously affecting the RF alignment. Disconnect the lead from the FM trap coil (L15) to the channel selector switch. Use a short jumper to connect point Ⓕ on the matching unit through a .001MFD capacitor to pin 1 (grid) of second video IF amplifier tube (V5). Remove the first video IF amplifier tube (V4) from its socket. Cover of the antenna matching unit must be in place during alignment. Connect the negative lead of a bias supply to point Ⓐ. Positive lead to chassis. Adjust for -5 volts at point Ⓐ.
NOTE: Adjustment A12 thru A15 are adjusted by expanding or compressing coil turns, except in antenna matching units in which C7, C8 and C9 are variable capacitors. C7 would be adjustment A13, C8 would be adjustment for A14 and A15. C9 would be adjustment A12.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Not used	45.75MC (400%Mod)	Any	Vert. Amp. to point Ⓒ. Low side to chassis.	A12	Set scope gain to maximum and adjust for MINIMUM 400% indication on scope.
13.	"	"	"	41.25MC (400%Mod)	"	"	A13	"
14.	300Ω Pad (Fig. 5)	Across antenna terminals thru 300Ω pad. (Fig. 5)	50MC (20MC Swp)	50MC 52MC 53MC 60MC	"	Vert. Amp. thru detector probe (Fig.1) to point Ⓕ. Low side to chassis.	A14,A15	Remove the .001MFD capacitor from point Ⓕ to pin 1 of V5. Connect a 300Ω ½ watt carbon resistor from point Ⓕ to chassis. Adjust A14 and A15 to obtain response curve similar to Fig. 6. Repeat steps 12, 13 and 14 until no further improvement is noted. Remove the 300Ω resistor and the detector probe between point Ⓕ and chassis. Replace V4 in its socket.

KRK22F AND KRK30F VHF TUNER ALIGNMENT

An RF unit which is operative and requires only minor touch up adjustments will require no presetting of adjustments. This unit is properly aligned at the factory and under normal use should not require alignment unless components are changed to effect alignment. When complete alignment is necessary make the following pre-adjustments.
① Preset A16 all the way out.
② Turn A8 so that slug is all the way out.
③ Set channels 7 thru 13 oscillator slugs one turn from tight. Disconnect the link from terminals of L36 (converter plate transformer) and shunt the terminals of L36 with a 39Ω carbon resistor. Tuner alignment as outlined below requires the use of a heterodyne frequency meter. The limits of oscillator injection are 2 volts minimum and 5.5 volts maximum measured at point Ⓓ with a VTVM. Connect negative terminal of a variable bias supply to point Ⓓ. Positive lead to tuner chassis. Adjust for -3 volts bias at point Ⓓ.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Direct	High side to point Ⓕ. Low side to chassis.	Not used	43.5MC (400%Mod)	2	Vert. Amp. to point B. Low side to chassis.	A17	Disconnect bias at point Ⓓ and short out AGC at point Ⓑ to chassis. Adjust A17 for MINIMUM 400% indication on scope. If necessary, A17 may be adjusted in the field to provide additional reflection of a specific frequency. Exercise care so that A17 is not tuned into channel 2 reducing that channels sensitivity. Remove short from tuner AGC and reconnect -3 volt bias at point Ⓓ.
16.		RF input of heterodyne frequency meter to end of insulated wire inserted in hole provided for adjustment of A33. Be careful that wire does not touch any of the tuned circuits as this may cause oscillator shift	"	Set freq. meter to 221MC	8	Not used	A18,A19 A18	Preset A18 to read -3 volts at point Ⓓ. Turn fine tuning control fully clockwise. Adjust A19 for audible beat on frequency meter. Adjust A18 clockwise until beat note just begins to change, then turn one full turn in same direction. Return fine tuning control to its mid-range position.

ALIGNMENT INSTRUCTIONS (cont)

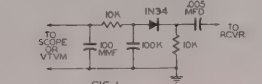

FIG 1

FIG. 2

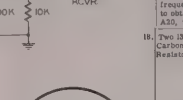

FIG. 3

FIG. 4

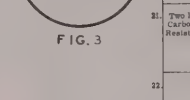

FIG 5

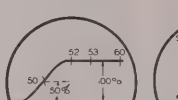

FIG.6

FIG. 7

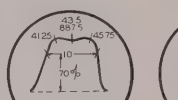

FIG. 8

FIG. 9

KRK 22F AND KRK 30F VHF TUNER ALIGNMENT (CONT.)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	NOTE: If channel 8 oscillator frequency cannot be reached by adjustment of A18, switch to channel 13 and adjust A20 for channel 13 oscillator frequency. Switch to channel 12 and adjust A21 for channel 12 oscillator frequency. Continue to channel 8 adjusting proper oscillator trimmer to obtain oscillator frequency on each channel. Also on channel 8 adjust A19 for channel 8 oscillator frequency. Switch to channel 13 and adjust A30, then switch back to channel 8 and adjust A18 again.							
18.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185 75MC	6	Vert. Amp. to point Ⓒ. Low side to chassis.	A33, A33, A34, A35	Set A6 fully counter clockwise. Set scope gain to maximum and attenuate generator output for MINIMUM input signal that will produce usable pattern on scope. Adjust for response curve similar to Fig. 4. Adjust A35 for maximum amplitude between markers. A34 affects bandpass. A32 affects tilt when A35 is properly adjusted. A33 affects the response bandwidth.
19.	Connect the DC probe of VTVM to point Ⓔ. Common to chassis. Adjust A18 for -3 volts at point Ⓔ. Repeat steps 17 and 18 until proper response is obtained.							
III.		Connect frequency meter as in step 18.	Not used	Freq. meter to 257MC	13	Not used	A20	Rotate fine tuning control maximum clockwise. Adjust A20 for audible beat on frequency meter. SLIGHTLY overshoot the adjustment as additional turn in the same direction. Then adjust A16 to again obtain an audible beat.
21.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (20MC Swp)	211.25MC 215.75MC	11	Vert. Amp. to point Ⓒ. Low side to chassis.	A36, A37	Adjust for response similar to Fig. 4. Turn off generator and check oscillator injection voltage at point Ⓔ using VTVM, as in step 19. If A18 required adjustment turn sweep generator back on and recheck channel 13 response. If necessary, retouch A36 and A37 for desired response.
22.		Connect frequency meter as in step 18.	Not used	Freq. meter to 221MC	8	Not used	A18	Check for audible beat on frequency meter. If necessary, adjust A18 for proper oscillator frequency.
23.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (20MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A33, A33, A34, A35	If necessary retouch A33 thru A35 to obtain response similar to Fig. 4. If A33 required adjustment turn off generator and switch back to channel 13 and check oscillator injection voltage as in step 19. If necessary, repeat steps 21, 22 and 23 until proper response is obtained.
24.		Connect frequency meter as in step 18.	Not used	Freq. meter to 139MC	6	Not used	A37	Set fine tuning control to its mid-range position. Adjust A37 for audible beat on frequency meter.
25.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (20MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A38, A39, A40	Adjust for response curve similar to Fig.7. Check oscillator injection voltage as in step 19. If necessary, readjust A38.
26.	If A18 required readjustment switch receiver and generator to channel 8. Readjust A32 for response similar to Fig. 4. Recheck A18 and A19 for proper oscillator frequency.							
27.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (20MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point Ⓒ. Low side to chassis.		Check for response curve similar to Fig.7. Check oscillator injection voltage for each channel at point Ⓔ. If markers fall below 80% on any channel retouch A38, A39 and A40 to obtain response curves within proper limits.
			109MC (10MC Swp)	107.25MC 111.75MC	5			
			89MC (20MC Swp)	87.25MC 91.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
28.	"	"	213MC (20MC Swp)	211.25MC 215 75MC	13	"		Check for response curve similar to Fig.7. Check oscillator injection voltage for each channel at point Ⓔ. If markers fall below 80% on any one channel retouch A32, A33 and A34 to obtain response curves within proper limits.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (20MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185 75MC	8			
			177MC (20MC Swp)	175.25MC 179.75MC	7			
29.		Connect frequency meter as in step 18.	Not used	Freq. meter to 257MC	13	Not Used	A20	Adjust individual channel oscillator slug for audible beat on each channel. Recheck oscillator injection voltage on each channel at point Ⓔ to verify that the voltages are within limits 2 volts MINIMUM and 5.5 volts maximum.
				251MC	12		A21	
				245MC	11		A22	
				239MC	10		A23	
				233MC	9		A24	
				227MC	8		A25	
				221MC	7		A26	
				129MC	6		A27	
				123MC	5		A28	
				117MC	4		A29	
				107MC	3		A30	
				101MC	2		A31	

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DENVER, COLORADO

RCA VICTOR MODELS 21-T-6082, U, 21-T-6083, U, 21-T-6114, U, 21-T-6115, U 21-T-6117, U, 21-T-6225, U, 21-T-6227, U, 21-T-6235, U, 21-T-6236, U, 21-T-6237 U (Ch. KC596, A, B, C, D, E)

ALIGNMENT INSTRUCTIONS (cont)

UHF ALIGNMENT OF KRK30F TUNER UNIT

Turn the change over switch to UHF position. To make RF adjustments for UHF tuner, the UHF unit will have to be removed from the set. IF and oscillator adjustments may be aligned without removing UHF tuner. It will be necessary to fabricate a test dial to fit over the split gear on the tuner shaft for accurate alignment. Reference marks at 0^{o}, 5^{o} and 164^{o} should be scribed on the test dial. Locate "O" degree reference point by placing a 1/16" shim between the stop pin on the tuner and the stop plate on the gear assembly with the capacitor plates fully meshed. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
30.	300Ω Pad (Fig. 5)	Across UHF antenna terminals thru 300Ω pad (Fig. 5)	887.5MC (20MC Swp)	887.5MC 41.25MC 43.5MC 45.75MC	83 (Rotate dial to 164^{o})	Vert. Amp. to point (H). Low side to chassis.	A41, A42, A43	Connect the high side of VHF generator thru a 1000Ω carbon resistor to rear terminal of 1N82 crystal holder and insert markers for 41.25MC, 43.5MC and 45.75MC. Adjust for response curve similar to Fig. 8. Adjust A41 and A42 for maximum overcoupled response curve centered at 887.5MC. Adjust A43 until the 43.5MC marker coincides with the 887.5 MC marker.
31.	"	"	473.5MC (20MC Swp)	473.5MC 41.25MC 43.5MC 45.75MC	14 (Rotate dial to 5^{o})	"	A44, A45	Adjust A44 until 43.5MC marker coincides with 473.5MC marker and 45.75MC marker as in Fig. 9. Adjust A45 to bring the oscillator trimmer adjustment A44 within range.

32. Repeat steps 30 and 31 until response curves as in Fig. 8 and 9 are obtained. With perfect tracking the three markers will ride on top of the response curve. They may ride down the curve as far as 70% without seriously affecting alignment. If they fall below 70% level, knifing of the RF plates is necessary to correct tracking. It is necessary to remove shield cover to knife RF plates. Always knife the plates while tuning in the lower frequency to avoid affecting the tracking above the point of knifing. A check of which section to knife may be made by touching the plates with the knifing tool while observing the response.

33. Connect the DC probe of a VTVM to point (H). Common to chassis. Set VTVM to 1.5 volts on DC scale. Tune over entire UHF range. Reading between .03 and .35 volts should be obtained. Voltages outside these limits are an indication of low B+ voltages, low or high crystal impedance or an oscillator tube operating outside its allowable limits. Connect the DC probe of VTVM to point (I), which is tuner bias terminal. Common to chassis. VTVM should read .5 and 2.5 volts. Readings outside of these limits will cause currents outside allowable limits and in such cases replacement of the oscillator tube should follow. If the oscillator tube is replaced, recalibration of the high and low frequency end of the bands is required as outlined above.

FM TRAP ALIGNMENT

Tune in a local TV station in which interference is noticed. Adjust A46 for minimum interference in picture.

SOUND IF ALIGNMENT

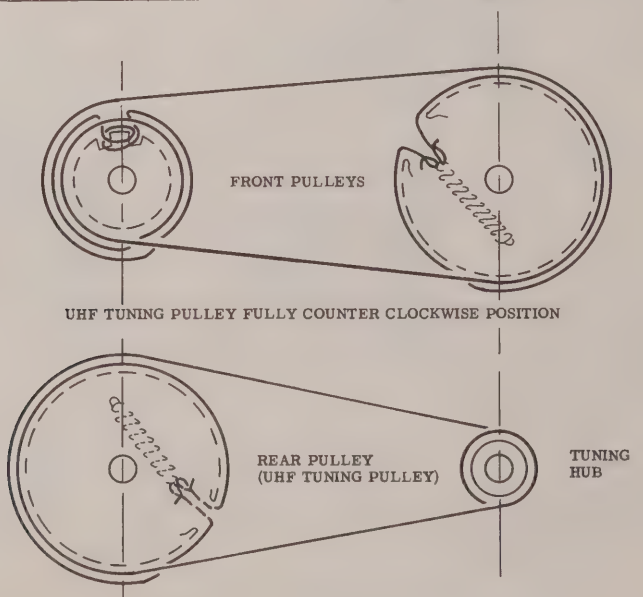
Ground pin 2 (grid) of 3rd Video IF amplifier tube (V6A) to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
34.	.01MFD	High side to pin 7 (grid) of 1st. video amp. tube (V7A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (J). Common to chassis.	A49	Adjust for maximum deflection. Peak with core at chassis end.
35.	"	"	"	"	"	A47, A48	Adjust for maximum deflection. Peak A48 with core at end of coil away from chassis.
36.	"	"	"	"	DC probe to point (K). Common to chassis.	A49	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Remove ground from pin 2 of V6A.

4.5MC TRAP ALIGNMENT

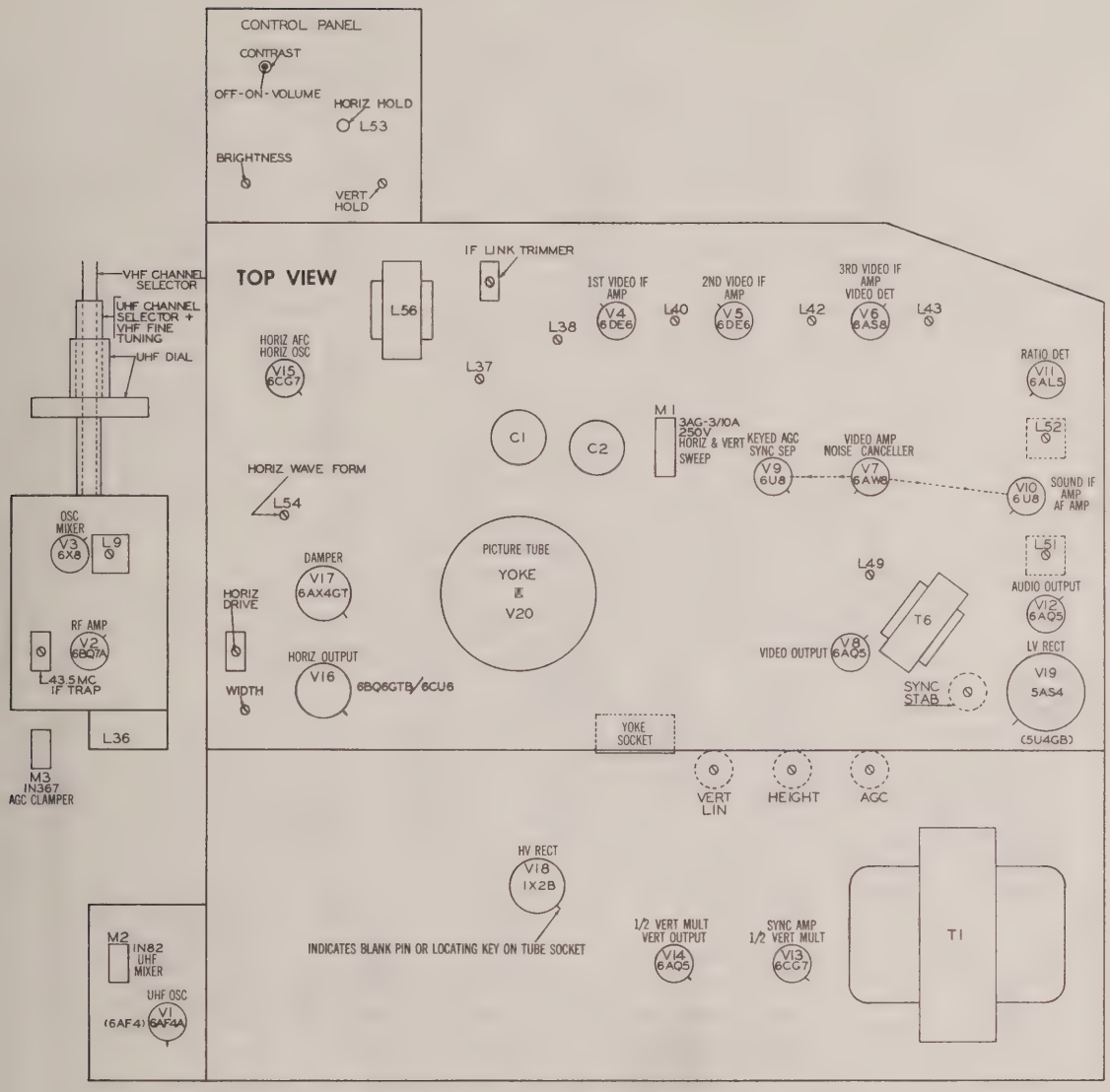
Ground pin 2 (grid) of 3rd Video IF amplifier tube (V6A) to chassis. When properly adjusted core will be away from chassis end of coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
37.	.01MFD	High side to pin 7 (grid) of 1st. video amp. tube (V7A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 1) to pin 2 (grid) of picture tube. Common to chassis.	A50	Increase output of generator for .5 volts on VTVM. Adjust for MINIMUM deflection. Remove ground from pin 2 of V6A. Tune in a TV station. Set contrast and brightness control for a normal picture. Rotate fine tuning control over its range. If 4.5MC beat is noted in picture retouch A50 for MINIMUM 4.5MC beat.



UHF DRIVE CORD STRINGING

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound -V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7 (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V8, V9, V20
Has pic, no sound - V10, V11, V12
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V13, V14
No horiz. sync - V13, V15
No vert. or horiz. sync - V9, V13

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V13, V14
Horiz. off freq. - V13, V15

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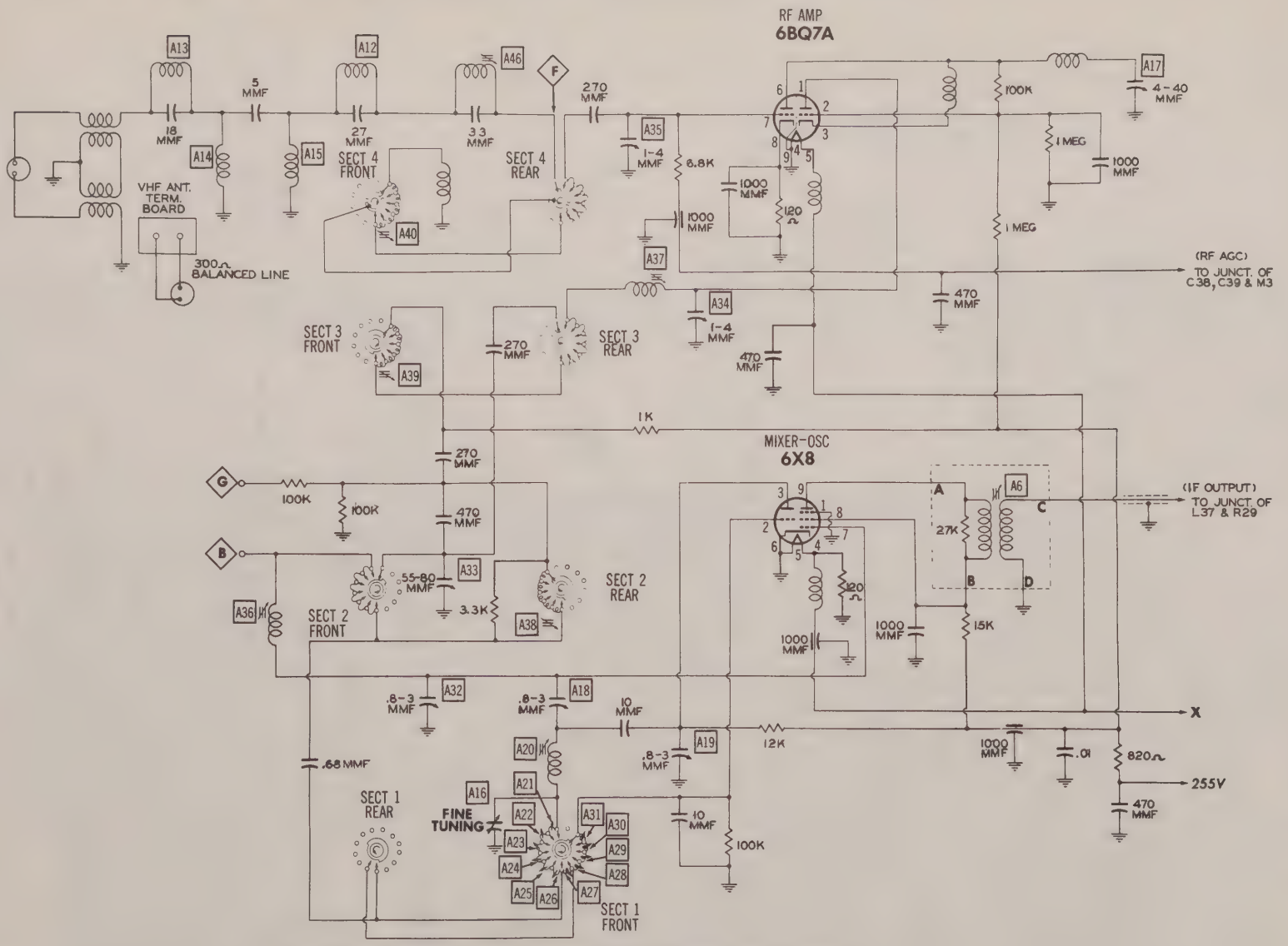

VHF TUNER KRK22F USED WITH CHASSIS KCS96, KCS96B, AND KCS96D

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE VHF TUNER SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4A	6AF4A	7DK	6AF4 may be used as an alternate
V2	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V3	Osc.-Mixer	6X8	6X8	9AK	
V4	1st. Video IF Amp.	6DE6	6DE6	7CM	
V5	2nd. Video IF Amp.	6DE6	6DE6	7CM	
V6	3rd. Video IF Amp.-Video Detector	6AS8	6AS8	9DS	
V7	Video Amplifier-Noise Canceller	6AW8	6AW8	9DX	
V8	Video Output	6AQ5	6AQ5	7BZ	
V9	AGC Keying-Sync Separator	6U8	6U8	9AE	
V10	Sound IF Amp.-AF Amplifier	6U8	6U8	9AE	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	Audio Output	6AQ5	6AQ5	7BZ	
V13	Sync Amplifier-Vert. Mult.	6CG7	6CG7		
V14	Vert. Mult.-Vert. Output	6AQ5	6AQ5	7BZ	
V15	Horiz. AFC-Horiz. Osc.	6CG7	6CG7		
V16	Horiz. Output	6BQ6GTB/6CU6	6BQ6GTB/6CU6	6AM	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5AS4	5AS4	5T	5U4GB used as an alternate

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RCA Victor PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V20	21ACP4A/21AMP4A	21ACP4A/21AMP4A① 21AMP4/21ACP4	21ACP4A/21AMP4A ①	21ACP4A ② 21ACP4 21AMP4A ② 21AMP4	21AMP4A ① 21AMP4	12N 12N 12N 12N	① Aluminized ② Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲100	400	100858		C152	FP431.4	TM-4015	Q-020	
B	▲30	50			BR255	TC47	TD-2045	FMD-305	
C	■10	400							
D	20	50							
C2A	▲100	400	100859 (Note 1)		C152		TM-D80-450	T-537	
B	▲80	350	(Note 1)		BR8045		TD-20-450	MTD-4530	
C	■10	400	(Note 1)						

Note 1. C2C is omitted in some versions and C2 is a dual unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	1-4		79556		829-4		3115-01-10	CT551		
C4	1000		79559							
C5	1000		79559							
C6	1000		79559							
C7	18				TCZ-18	TZ12	NP0K-180			
C8	5			NP0-SI5	TCZ-4R7	TZ07	NP0A-050	ZT-555	5TCCB-V5	
C9	27			NP0-SI25	TCZ-27	TZ16	NP0L-270		5TCC-Q25	
C10	33			NP0-SI33	TCZ-33	TZ18	NP0L-330	ZT-5433	5TCC-Q33	
C11	3.3		71503	NP0-SI3.3	TCZ-3R3	TZ06	NP0A-3R3	ZT-5533	5TCCB-V33	
C12	270		75199	SI-270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C13	1-4		76532		829-4		3115-01-10	CT551		
C14	1000		77084	EF-001	MFT-1000					
C15	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C16	270		75199	SI-270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C17	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C18	.8-3		77151		829-3		3115-01-0R5	CT565A		
C19	2.2			NP0-SI2.2	TCZ-2R2	TZ05	NP0A-2R2		5TCCB-V22	
C20	2.2			NP0-SI2.2	TCZ-2R2	TZ05	NP0A-2R2		5TCCB-V22	
C21	270		71599	SI-270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C22	150		78276	SI-150	D6-151	TP36	GP2K-151	UC-5315	5GA-T15	
C23	100		75437	SI-100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C24	1000		77084	EF-001	MFT-1000					
C25	.8-3		77151		829-3		3115-01-0R5	CT565A		
C26	.8-3		77913		829-3		3115-01-0R5	CT565A		
C27	10		78247	NP0-SI-10	TCZ-10	TZ09	NP0A-100		5TCC-Q1	
C28	.8-3		77151		829-3		3115-01-0R5	CT565A		
C29	10		77865	NP0-SI-10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C30	.68		71504	NP0-SI-1	TCZ-R68	TZ02	NP0A-0R68		5TCCB-V1	
C31	82		78603	DI-000082	D6-820	G040	801-820		5GA-Q82	
C32	1000		77084	EF-001	MFT-1000					
C33	1000		77084	EF-001	MFT-1000					
C34	1000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C35	470		77293	BPD-00047	DD-471	K060	831-471	UC-5347		
C36	470		77293	BPD-00047	DD-471	K060	831-471	UC-5347		
C37	1000		77084	EF-001	MFT-1000					
C38	1000		77252	EF-001	DD-102		801-001	DC-521		Note 2
C39	.47	200	100299	P288N-47		CUB2P47		PT4047		
C40	15		39044	N750-SI15	TCN-15	TN03	N750K-150		5TCC-Q15	
C41	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42	470		78622	BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C43	4700		73473	BPD-0047	DD-472	K079	811-0047	DC-525	5HK-D47	
C44	.39	200	79318							

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	RCA Victor PART No.	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C45	470		77253	BPD-00047	DD-471	K060	831-471	UC-5347	5GA-T47	
C46	1000		78623	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C47	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C48	4700		73473	BPD-0047	DD-472	K079	841-0047	DC-535	5HK-D47	
C49	1000		78623	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C50	220		100672	DI-220	DD-331	G051	811-221	UC-5333	5GA-T22	
C51	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C52	4700		73473	BPD-0047	DD-472	K079	841-0047	DC-535	5HK-D47	
C53	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C54	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C55	3		101200	NPO-03	TC5-3R3	TZ06	NPO4-030	ET-553	ETCCB-V33	
C56	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C57	9		100144							
C58	820	500	53119	1467-00082	D6-830	IW5T82	GP2K-831		1FM-382	
C59	39		73564	N750-S39	TCN-39	TN13	N750K-390			
C60	9		77109							
C61	1	600	78149	P668N-1	DF-104	CU5BP1		PT601	6TM-P1	
C62	1	600	73357	P668N-1	DF-104	CU5BP1		PT601	6TM-P1	
C63	.068	400		P488N-068		CU4BS8			4TM-S68	
C64	.047	400	73553	P488N-047	DF-503	CU4BS47		PT4H7	4TM-S47	
C65	.0039	400	79018	P488N-004	DF-402	CU4BS39	GP2-333-402	PT4H	4TM-S4	
C66	10000		73960	BPD-01	DD-103	K062	811-01	DC-511	5HK-S1	
C67	47	200	73787	P383N-47		CU3S2P47		PT4H7	2TM-P47	
C68	3		78507	NPO-03	TC5-3R3	TZ06	NPO4-030	ET-553	ETCCB-V33	
C69	39		100350							
C70	.01		78334	SI-S8	D6-560	TP31	GP1K-560	UC-5456	5GA-Q56	
C71	10000		73960	BPD-01	DD-103	K062	811-01	DC-511	5HK-S1	
C72	10000		73960	BPD-01	DD-103	K062	811-01	DC-511	5HK-S1	
C73	10000		73960	BPD-01	DD-103	K062	811-01	DC-511	5HK-S1	
C74	1000		77252	BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C75	.47	200	73548	P383N-47		CU3S2P47		PT4H7	2TM-P5	
C76	1000	500	39652	1464-0047	DD-103			JH-BD1	801-001	MC356
C77	.0027	400	73539	1467-0027	D6-272		K075	GP2-333-272	UC-5327	5GA-D27
C78	.0082	400	79018	1467-0082						Note 3
C79	.01	200	79316	BPD-01	D6-103	CU5AE1	GP3-333-103	PT411	4TM-S1	Note 4
C80	.01	200	79014	BPD-01	D6-103	CU5AE1	GP3-333-103	PT411	4TM-S1	
C81	.0027	600	73539	1467-0027	D6-272	K075	GP2-333-272	UC-5327	5GA-D27	Note 5
C82	270		39638	1468-00027	D6-271	G054	GP2K-271	UC-5327	5GA-T27	Note 6
C83	.01	400	73920	BPD-01	D6-103	CU5AE1	GP3-333-103	PT411	4TM-S1	
C84	.0033	1000	73819	HVD-15-3300		CU5BD33	IR5KV-333	PT16S3	10GA-D33	Note 7
C85	10000		73960	BPD-01	DD-103	K062	811-01	DC-511	5HK-S1	
C86	.22	200	79317	P283N-22		CU2S2P22		PT4G2	2TM-P22	
C87	.1	600	79149	P668N-1	DF-104	CU5BP1		PT601	6TM-P1	
C88	.330	500	39640	1468-00033	D6-331	5W5T33	GP2K-331	UC-5333	5GA-T33	
C89	.330	500	39640	1468-00033	D6-331	5W5T33	GP2K-331	UC-5333	5GA-T33	
C90	.033	400	73552	BPD-03	DF-303	CU5BG33		PT5I33	4TM-S33	
C91	.01	400	73561	BPD-01	D6-103	CU5AE1	GP3-333-103	PT411	4TM-S1	
C92	.0022	600	73595	BPD-0022	D6-222	CU5BD23	GP2-333-222	PT5S23	6TM-D23	
C93	.0047	600	73920	BPD-0047		CU5BD47		MC2665	6TM-D47	
C94	.022	600	73798	BPD-03	DF-303	CU5BG33	S17-02	PT5I33	6TM-S33	
C95	.047	400	73553	BPD-08	DF-503	CU4BS47		PT4H7	4TM-S47	
C96	.01	400	73561	BPD-01	D6-103	CU5AE1	GP3-333-103	PT411	4TM-S1	
C97	.056	200		P288N-068		CU2S8S8			4TM-S68	
C98	.0033	600	79315	BPD-0033		CU5BS33			6TM-S33	
C99	.015	200	79530	BPD-015		CU2S2P15			2TM-S15	
C100	.027	600	100303							
C101	.001	1600	73949	HVD-15-1500		DD30-102	CU5BD1	IR5KV-102	PT16S1	MB-D1
C102	220	500	39656	1469-00022		DD-221	5W5T22	811-221	MCB240	1FM-322
C103	62	1000	78474							
C104	68	1000	78475							
C105	.1	400	73551	P488N-1		DF-104	CU5AP1		PT601	4TM-S1
C106	.023	200	79323	BPD-03		DF-303	CU5AE23	S17-03	PT4G3	2TM-S23
C107	.47	200	99324	P288N-47			CU2BP47		PT4G47	3TM-P47
C108	330	500	78476	1469-00033			5R5T33			MB-S33
C109	.01	600	78594				CU5BS1			6TM-S1
C110	.0012	600	78995	1464-0013			1R5D12	811-122		MB-S12
C111	680	500	78796	1464-00068		D6-681	1R5T68	811-681		MB-S68
C112	.1	600	73557	P668N-1		DF-104	CU5BP1		PT601	6TM-P1
C113	.27	200	73788							
C114	330	1000	101295	HVD-15-330		DD30-331	5P15T3	IR5KV-331	DC20333	15GA-T33
C115	270	1000	78579	HVD-15-270		DD-271	5P15T25	1R5KV-271		10GA-T27
C116	.047	1000	73587						PT16I5	
C117	.1	400	73557	P488N-1		DF-104	CU5AP1		PT601	4TM-P1
C118	.1	400	73551	P488N-1		DF-104	CU5AP1		PT601	4TM-P1
C119	560	1000	74259			DD-561				
C120	270	2500	100324			DD30-271	1DP25T25			30GA-T27
C121	150	2500	104453	HVD-30-150		DD30-151		3KV-151		30CA-T15
C122	150		78579	HVD-30-150		DD30-151		3KV-151		30CA-T15
C123	220			DI-00022		DD-221	G051	811-221	UC-5332	5GA-T22 Note 8

Note 2. Not used in chassis KCS96, KCS95B and KCS96D.
Note 3. Chassis KCS96B, KCS96C, KCS96D and KCS96E use .01MFD in this application.
Note 4. Chassis KCS96B, KCS96C, KCS96D and KCS96E use .0047MFD in this application.
Note 5. Chassis KCS96B, KCS96C, KCS96D and KCS96E use .0082MFD in this application (part #79019).
Note 6. Not used in chassis KCS96 or KCS96A.
Note 7. Chassis KCS96B, KCS96C, KCS96D and KCS96E use .0022MFD in this application (part #73803).
Note 8. Used only in chassis KCS96, KCS96B or KCS96D.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	RCA Victor PART No.	REPLACEMENT DATA CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250KΩ	½	100482	F1-15	RTV-S64	QJ-S61 ●	UF33R ① UR16-T25) †	Contrast (Panel) Volume (Rear) Tap at 200KΩ
B	Switch			R3-57			UR-36) †	Attach to R1B.
C	Switch			KB-1			U-43	Brightness
H1A	200KΩ	½	100885	B-46	A47-200K-S	QJ1-129	Not Req.	Attach to R2A.
B	Shaft		Not Req.	Not Req.	F8-3	Not Req.	Not Req.	Vertical Hold
H2A	1.5MEG	½	100843	AB-743	A47-1.5Meg-S	QJ1-138	U-155	Attach to R3A.
B	Shaft		Not Req.	AK-3	F8-3	Not Req.	Not Req.	Sync Stability
H4A	2Meg	½	100883	BX-75	A47-2Meg-S	QJ1-139	TA29L	Attach to R4A.
B	Shaft		Not Req.	Not Req.	F43-1/4	SQ	Not Req.	AGC
R5A	500KΩ	½	100882	AB-81		QJ1-133	TAP55R	
B	Shaft		Not Req.	AK-1		SQ	Not Req.	Attach to R5A.
R6A	5Meg	½	100920	AB-87	A47-5Meg-S	QJ1-141	SU-87	Height
B	Shaft		Not Req.	AK-19	F43-1/4	SQ	Not Req.	Attach to R6A.
R7A	2.5Meg	½	100884	BX-83	A47-2.5Meg	QJ1-239	TA35L	Vertical Linearity
B	Shaft		Not Req.	Not Req.	F43-1/4	SQ	Not Req.	Attach to R7A.

† Universal Replacement (Mallory Exact Duplicate Part No. UE41S).
● Concentrist Equivalent: K-8 Kit, Base Elements and Shafts; R17-105, R17-105 (Panel)
R13-137X, R1-118 (Rear)
76-1 (Switch)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R8	4700Ω	½	502247	BTS-4700	
R9	3300Ω	½	502233	BTS-3300	
R10	68000	½	502268	BTA-6800	
R11	8800Ω	½	502388	BTS-8800	
R12	1Meg	½	502510	BTS-1Meg	
R13	1000Ω	½	502210	BTS-1000	
R14	100KΩ	½	502410		
R15	1Meg	½	502510	BTS-1Meg	
R16	130Ω	½	502131	BTS-130	
R17	1000Ω	½	502210	BTS-1000	
R18	100KΩ	½	502410		
R19	123Ω	3	523313		
R20	100KΩ	½	502410	BTS-100K	
R21	100KΩ	½	502410	BTS-100K	
R22	680Ω	½	502168	BTS-680	
R23	3300Ω	½	502233		
R24	15KΩ	2	523315	BTS-150	
R25	130Ω	½	502131	BTS-130	
R26	150Ω	½	502115		
R27	470KΩ	½	502447	BTS-432	
R28	510Ω	½	502151		
R29	6800Ω 5%	½	502268	BTS-560 5%	
R30	47KΩ 5%	½	502347	BTS-47K 5%	
R31	10000Ω 5%	½	502310	BTS-1000 5%	
R32	560Ω	½	502169	BTS-680	
R33	3900	½	30498	BTS-390	
R34	56Ω 5%	½	502056	BTS-56 5%	
R35	10KΩ	½	502310	BTS-10K	
R36	150Ω 5%	½	502315	BTS-150 5%	
R37	330Ω	½	515163	BTA-330	
R38	4300Ω	7	100846		
R39	1800Ω 5%	½	502418	BTS-150K 5%	
R40	680Ω	½	502168	BTS-680	
R41	270 5%	½		BTS-27 5%	Note 1
R42	470Ω	½	502147	BTS-470	
R43	330 5%	½	502113	BTS-130 5%	
R44	470 5%	½	502147	BTS-47 5%	
R45	10KΩ	3	522310	BTB-10K	
R46	3000Ω 5%	½		BTA-3000 5%	Note 2
R47	180Ω	½	502118	BTS-180	
R48	470KΩ	½	502447	BTS-470K	
R49	180KΩ	½	502418	BTS-180K	
R50	1800Ω	3	522318	BTB-1800	
R51	560Ω	½	502158	BTA-560	Note 3
R52	470KΩ	½	502447	BTS-470K	
R53	150KΩ	½	502415	BTS-150K	
R54	330KΩ	½	502433	BTS-330K	
R55	330KΩ	½	502433	BTS-330K	
R56	56KΩ 5%	½	502356	BTS-56K 5%	
R57	150Ω 5%	½	502315	BTS-150 5%	
R58	33KΩ	½	502333	BTS-33K	
R59	47KΩ	3	522347	BTB-47K	
R60	68KΩ 5%	½	502368	BTS-68K 5%	
R61	1Meg 5%	½	502510	BTS-1Meg 5%	
R62	56KΩ	½	502356	BTS-56K	
R63	39KΩ	½	502339	BTS-39K	
R64	330KΩ	½	502433	BTS-330K	
R65	270Ω	7		BTP-270	Note 4
R66	15KΩ	½	502315	BTS-15K	
R67	47KΩ	½	502347	BTS-47K	
R68	12KΩ	½	502312	BTS-12K	
R69	1000Ω	½	502210	BTS-1000	
R70	10KΩ 5%	½	502310	BTS-10K 5%	
R71	10KΩ 5%	½	502310	BTS-10K 5%	

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R72	39KΩ	½	502339	BTS-39K	
R73	47KΩ	½	502347	BTS-47K	
R74	10Meg	½	502810	BTS-10Meg	
R75	330KΩ	½	502433	BTS-330K	Note 5
R76	470KΩ	½	502447	BTS-470K	
R77	560Ω	½	502158	BTA-560	
R78	3300Ω	7	101280	PWT-3300	
R79	27KΩ	½	502327	BTS-27K	
R80	470KΩ	½	502447	BTS-470K	
R81	22KΩ	½	502322	BTS-22K	
R82	33KΩ	½	502333	BTS-33K	
R83	47KΩ	½	502347	BTS-47K	
R84	82KΩ	½	502382	BTS-82K	
R85	18000Ω	½	502318	BTS-1800 5%	
R86	2200Ω 5%	½	502222	BTS-2200 5%	
R87	170KΩ	½	502417	BTS-170K	
R88	1Meg	½	502510	BTS-1Meg	
R89	1.2Meg	½	502512	BTS-1.2Meg	
R90	1Meg	½	502510	BTS-1Meg	
R91	33KΩ	½	502333	BTS-33K	
R92	560KΩ	½	502456	BTS-560K	
R93	27000Ω 5%	½	502327	BTS-2700 5%	
R94	6800Ω	1	512388	BTA-6800	
R95	22KΩ	½	502322	BTS-22K	
R96	18KΩ	½	502318	BTS-18K	
R97	5.6Meg	½	502568	BTS-5.6Meg	
R98	47KΩ	½	502347	BTS-47K	
R99	1Meg	½	502510	BTS-1Meg	
R100	5.6Meg	½	502568	BTS-5.6Meg	
R101	1Meg	½	502510	BTS-1Meg	
R102	470KΩ	½	502447	BTS-470K	
R103	180KΩ 5%	½	502318	BTS-180K 5%	
R104	15KΩ	½	502315	BTS-15K	
R105	8200Ω	½	502282	BTS-8200	
R106	330KΩ	½	502433	BTS-330K	
R107	470KΩ	½	502447	BTS-470K	
R108	22KΩ	½	502322	BTS-22K	
R109	22KΩ 5%	1	512322	BTA-22K 5%	
R110	150Ω	1	512156	BTA-150	
R111	2600Ω				
R112	560Ω	½			
R113	220KΩ	½	502422	BTS-220K	
R114	5300Ω	½	502433		
R115	820KΩ	½	502482		
R116	180KΩ 5%	½	502418		
R117	82KΩ	½	502382	BTS-82K	
R118	3900Ω	½	502239		
R119	100KΩ 5%	½	502410	BTA-100K 5%	
R120	6.8Meg	½	502668		
R121	47KΩ	½	502347	BTS-47K	
R122	820KΩ	½	502482	BTS-820K	
R123	33KΩ	1	512339	BTA-33K	
R124	560KΩ	½	502456	BTS-560K	
R125	1Meg	½	502510		
R126	47Ω	½	502047	BTS-47	
R127	68000Ω	2	522368		
R128	100Ω	3	74015	BW2-100	
R129	1200Ω	½	502322		
R130	4700Ω	½	502247		
R131	270KΩ	½	502427	BTS-270K	
R133	68KΩ	½	502368	BTS-68K	
R134	.68Ω	½	100645		
R137	1000Ω	½	502310	BTS-1000	
R138	100KΩ	½	502410	BTS-100K	

Note 1. Some versions use a 22Ω ½W 5% resistor in this application.
Note 2. Some versions use a 2700Ω 1W resistor in this application.
Note 3. Some versions use a 680Ω ½W resistor in this application (Mfgr. Part No. 502168).
Note 4. Not used in some versions.
Note 5. A 33000 ½W resistor is used in chassis KCS96 and KCS96A.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RCA Victor PART No	REPLACEMENT DATA Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	560 VCT ② 5.7A	5VAC 2.80ADC	6.3VAC ③ 6.1A	101252					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	RCA Victor PART No	Halldorson PART No	Merit PART No	REPLACEMENT DATA RCA TYPE No	Ram PART No.	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	100880	FB446 *	HVO-36 *	X123 *	A-8244 *	F.LY-50 *	D-50 * ①	
T3	Vert. Output Trans.	100887	21900 ②④	A-2823 ③	V307-3	A-8145 ③	26872 ③④	A-10RX ③	
T4A	Yoke (90°) Horiz. (58.5MH)	101147 ⑤	DF607 ⑥⑦	MDF-42 ⑥⑦	T90F19/43 ⑥⑦	DY-16A ⑥⑦	Y-16 ⑥⑦	Y-41 ⑥⑦	
B	Vert. (26MH)								
T5A	Width-Series Coil (.5-3.4MH)	100853		MWC-10			WC-34		
B	Parallel Coil (2.4-19MH)								

① Drill new mounting hole(s).
② Use 7 to 1 turns ratio.
③ Connect as auto transformer.
④ Connect B+ to point of original transformer red lead (yoke socket pin #6).
⑤ Complete with plug, capacitor C123, resistors R111 and R112.
⑥ Use original horizontal yoke damping network with capacitor C133 across terminals #3 and #7.
⑦ Connect horizontal yoke terminal #3 to yoke plug pin #4, horizontal yoke terminals #2 and #7 to plug pin #5, horizontal yoke terminal #1 to plug pin #3.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5	5	9	5	5	5	5	9
	4	4	7	4	4	4	4	7
	3	3	5	3	3	3	3	5
	2	2	3	2	2	2	2	3
	1	1	1	1	1	1	1	1
Connect Width Coil Across		1 & 2	1 & 2	1 & 3	1 & 2	1 & 2	1 & 2	1 & 3

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	7.8KΩ	3.4Ω	100856	Z1903	A-3030	A-3823	26548	S-97	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V C IMP	REPLACEMENT DATA RCA Victor PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5	PM	3.4Ω	77000 L 2	5A1	22851	L Used in chassis KCS96, A, B C
	8	PM	3.4Ω	74464 L 2	8A2I	20853	L Used in chassis KCS96D, E only.

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω		79584				
	UHF Mixer Coupling Coil	0Ω						
L3	UHF Osc Coupling Coil	0Ω						
L4	Fil. Choke	0Ω		79565				
L5	Fil. Choke	0Ω		79565				
L6	Fil. Choke	0Ω		79565				
L7	UHF Osc. Shunt Coil	0Ω		79586				Not used in some versions.
L8	UHF IF Coil	0Ω		79587				
L9	VHF Ant. Matching Trans.	.6Ω	.4Ω	100454				Note 1
L10	VHF Ant. Matching Trans.	.6Ω	.4Ω	100454				Note 1
L11	IF Trap	0Ω		100454				Note 1
L12	Ant. Shunt Coil	0Ω		100454				Note 1
L13	Ant. Shunt Coil	0Ω		100454				Note 1
L14	IF Trap	0Ω		100454				Note 1
L15	FM Trap	0Ω		100454				Note 1
L16	RF Choke	0Ω		77859				Note 2
L17	VHF Ant. Coils	0Ω		78398				Note 2
L18	VHF Ant. Coil	0Ω		73458				Note 2-Channel 6
L19	VHF Ant. Coil	0Ω		78401				Channel 13
L20	RF Choke	0Ω						
L21	UHF IF Coil	0Ω		79542				
L22	RF Choke	.3Ω	.3Ω	78466				
L23	Fil. Choke	0Ω		77206				
L24	Neut. Coil	0Ω		78582				
L25	VHF RF Coil	0Ω		77921				Note 3-Channel 13
L26	VHF RF Coils	0Ω		78274				Note 3
L27	VHF RF Coil	0Ω		73460				Note 3-Channel 6
L28	UHF IF Coil	0Ω		78584				Note 3
L29	VHF Mixer Grid Coil	0Ω		77919				Note 4-Channel 13
L30	VHF Mixer Grid Coils	0Ω		78272				Note 4
L31	VHF Mixer Grid Coil	0Ω		73374				Note 4-Channel 6
L32	UHF IF Coil	0Ω		78583				Note 4
L33	Fil. Choke	0Ω		78783				Note 5-Channel 13
L34	VHF Osc. Coil	0Ω		77915				Note 5
L35	VHF Osc. Coils	0Ω		78068				Note 5
L36	Conv. Plate	.3Ω	.1Ω	78399				Includes 27KΩ resistor
L37	47.25MC Trap	.1Ω		78204		TV-153	6225	
L38	1st Video IF	.2Ω	.2Ω	78203	17-4533	TV-130	6219	
L39	Fil. Choke	0Ω						
L40	2nd Video IF	.8Ω	.8Ω					
L41	Fil. Choke	0Ω						
L42	3rd Video IF	.8Ω	.8Ω					
L43	4th Video IF	.8Ω	.8Ω					
L44	Series Peaking Coil	2.9Ω		100359	19-3036	TV-180	6176	36 Microhenries
L45	Shunt Peaking Coil	1Ω		101287	19-3250	TV-185	6181	250 Microhenries
L46	Fil. Choke	0Ω		73477	19-3001	TV-180	6404	1 Microhenry
L47	Series Peaking Coil	6Ω		101286	19-3180 *	TV-184 *	6180 *	180 Microhenries; Wound on 5.6KΩ resistor
L48	Shunt Peaking Coil	12.5Ω		101289	19-3300 ■		6155 ■	300 Microhenries; Wound on 680Ω resistor
L49	4.5MC Trap	9.3Ω		101286				
L50	Series Peaking Coil	7Ω		101290	19-4123	TV-182	6176	120 Microhenries; Wound on 22KΩ resistor
L51	Sound IF	2.8Ω		100365	17-1031		1470	Tertiary Windup .3Ω
L52	Ratio Det.	10Ω	1Ω CT	100364				1.5 Microhenries, IRC Part No. C1-1
L55	RF Choke	.72Ω		78640	19-1001		4804	

Note 1. Part of complete assembly-complete antenna matching trans., Part No. 100454, includes C7 thru C10, L9 thru L15-Part No. 100454.
Note 2. Part of complete assembly-stator complete with rotor, C11 and L16 thru L19-Part No. 78390.
Note 3. Part of complete assembly-stator complete with rotor, C18, C20, C22, L25 thru L28 and R17-Part No. 78274.
Note 4. Part of complete assembly-stator complete with rotor, C21, C23, C30, L29 thru L33, and R20 thru R23.
Note 5. Part of complete assembly-stator complete with rotor C24, L34 and L35.
* Parallel with 6.8KΩ resistor.
■ Parallel with 680Ω resistor.

RCA VICTOR MODELS 21-T-6083, U, 21-T-6114, 21-T-6115, U, 21-T-6117, U, 21-T-6227, U, 21-T-6235, U, 21-T-6236, U, 21-T-6237, U (Ch. KCS96, A, B, C, D)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L53	83Ω		79966 *							Horiz. Osc.
L54	46Ω		100300							Horiz. Waveform

* Tapped at 62Ω.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L56	.280ADC	38Ω	1.3HY	77676	C5037 ①	C-2996 ①	C-2326 ①	26C44 ①	C-17X ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RCA Victor PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3/10A	78214	78218	312.300 (3AG 3/10A)	357001	AGC 3/10	4405

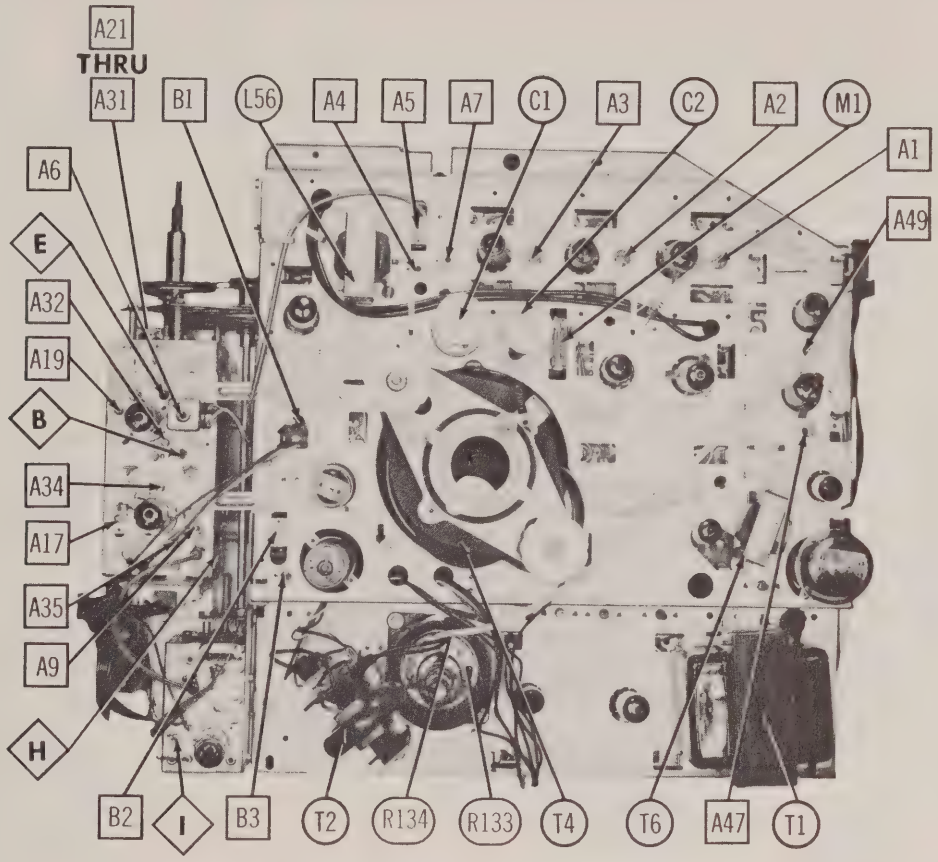
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		RCA Victor PART No.	SYLVANIA PART No.	
M2	1N82 *	77489	1N82 or 1N82A	UHF Mixer
M3	1N367	100844	1N34A	AGC Clamper

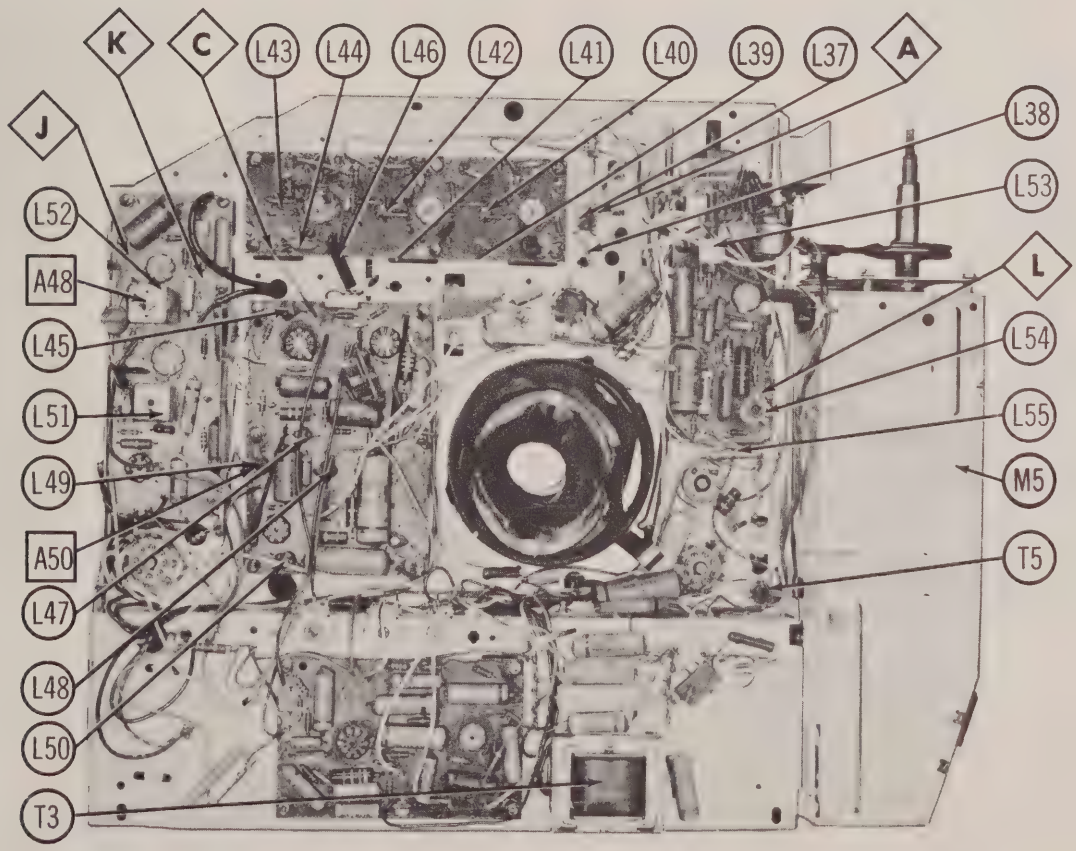
* Some versions may use crystal diode type K3D in this application.

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Dial Light	11891	Used in all chassis except KCS96, KCS96A
M5	Tuner	KRK30F	VHF-UHF - used in chassis KCS96A, KCS96C, KCS96E
M6	Tuner	KRK22F	VHF - Used in chassis KCS96, KCS96B and KCS96D
M7	Switch	100619	VHF-UHF - Used in chassis KCS96A, KCS96C, KCS96E
M8	Switch		TV-Phono-Tone - Used in all chassis except KCS96, KCS96A
M9	Focus Magnet	101129	Includes centering device
M10	Ion Trap	76141	
A17	Trimmer Cap.	77616	Tuner - RF Plate Trimmer (4-40MMF)
A5	Trimmer Cap.	100851	Video IF input trimmer (5-70MMF)
B2	Trimmer Cap.	100849	Horiz. Drive (10-160MMF)
	Frame	101001	Flax gold for cabinet front - For ebony instruments - Models 21T6082, U
	Frame	100573	Gold for cabinet front - For maroon, gold tone, mahogany grain, oak grain, walnut grain instruments - Models (all) except 21T6082U
	Knob	101008	AGC - For mahogany grain instruments - Models 21T6115U, 21T6225U, 21T6255U
	Knob	101009	AGC - For gold tone, walnut grain and oak grain instruments - Models 21T6114U, 21T6117U, 21T6227U, 21T6256U, 21T6257U
	Knob	101124	Contrast - For all models and finishes
	Knob	101010	Horiz. hold - For ebony, maroon and mahogany grain instruments - Models 21T6082, U, 21T6083, U, 21T6115, U, 21T6225, U, 21T6255, U
	Knob	101011	Horiz. Hold - For gold tone, walnut grain, oak grain instruments - Models 21T6114, U, 21T6117, U, 21T6227, U, 21T6256, U, 21T6251, U
	Knob	101057	On-off-volume - For ebony, maroon, mahogany grain instruments - Models 21T6082, U, 21T6083, U, 21T6115, U, 21T6225, U, 21T6255, U
	Knob	101137	On-off-volume - For gold tone, walnut grain and oak grain instruments - Models 21T6114, U, 21T6117, U, 21T6227, U, 21T6256, U, 21T6257, U
	Knob	101006	Vert. hold and brightness - For ebony, mahogany grain, and maroon instruments - Models 21T6082, U, 21T6083, U, 21T6115, U, 21T6225, U, 21T6255, U
	Knob	101007	Vert. hold and brightness - For gold tone, walnut grain, oak grain instruments - Models 21T6114, U, 21T6117, U, 21T6227, U, 21T6256, U, 21T6257, U
	Knob	100637	VHF channel selector - For ebony, maroon and mahogany grain instruments - Models 21T6082, 21T6083, 21T6115, 21T6225, 21T6255
	Knob	100638	VHF channel selector - For gold tone, walnut grain and oak grain instruments - Models 21T6114, 21T6117, 21T6227, 21T6256, 21T6257
	Knob	101015	VHF fine tuning - For ebony, maroon and mahogany grain instruments - For all VHF models
	Knob	100627	VHF-UHF channel selector - For ebony, mahogany grain and maroon instruments - Models 21T6082U, 21T6083U, 21T6115U, 21T6225U, 21T6255U
	Knob	100628	VHF-UHF channel selector - For gold tone, walnut grain and oak grain instruments - Models 21T6114U, 21T6117U, 21T6227U, 21T6256U, 21T6257U
	Knob	100629	VHF-UHF fine tuning - For all VHF-UHF models
	Safety Glass	100575	



CHASSIS-TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4A	*† 23KΩ	8KΩ	0Ω	.1Ω	0Ω	8KΩ	*† 23KΩ		
V 2	6BQ7A	† 1.9KΩ	550KΩ	650KΩ	0Ω	.1Ω	650KΩ	220KΩ	120Ω	0Ω
V 3	6X8	0Ω	100KΩ	† 13KΩ	.1Ω	0Ω	0Ω	100KΩ	† 16KΩ	† 16KΩ
V 4	6DE6	60KΩ	56Ω	0Ω	.1Ω	▲ 680Ω	▲ 680Ω	0Ω		
V 5	6DE6	35KΩ	▲27Ω	0Ω	.1Ω	† 700Ω	† 700Ω	INF		
V 6	6AS8	† 4.8KΩ	.9Ω	180Ω	.1Ω	0Ω	4KΩ	0Ω	47Ω	† 4.8KΩ
V 7	6AW8	2.2KΩ	1Meg	† 3KΩ	.1Ω	0Ω	180Ω	4KΩ	† 5KΩ	† 13KΩ
V 8	6AQ5	470KΩ	1KΩ	0Ω	.1Ω	† 3.6KΩ	† 38Ω	470KΩ		
V 9	6U8	† 1Meg	† 22KΩ	† 38Ω	0Ω	.1Ω	230KΩ	† 5KΩ	0Ω	2.2Meg
V 10	6U8	† 330KΩ	47KΩ	† 18KΩ	0Ω	.1Ω	† 6KΩ	0Ω	0Ω	10Meg
V 11	6AL5	INF	INF	.1Ω	0Ω	10KΩ	0Ω	10KΩ		
V 12	6AQ5	470KΩ	560Ω	.1Ω	0Ω	† 3.7KΩ	† 3.3KΩ	470KΩ		
V 13	6CG7	† 15KΩ	33KΩ	0Ω	0Ω	.1Ω	● 1.5Meg	2.5Meg	0Ω	0Ω
V 14	6AQ5	2Meg	0Ω	.1Ω	0Ω	† 500Ω	† 200Ω	2Meg		
V 15	6CG7	† 38Ω	1.5Meg	238KΩ	0Ω	.1Ω	† 39KΩ	250KΩ	0Ω	0Ω
V 16	6BQ6GTB/	NC	0Ω	NC	† 6.8KΩ	800KΩ	NC	.1Ω	100Ω	TOP CAP ● 19Ω
	6CU6									
V 17	6AX4GT	NC	NC	850KΩ	NC	†40Ω	NC	.1Ω	0Ω	
V 18	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲345Ω
V 19	5AS4	NC	35KΩ	NC	23Ω	NC	25Ω	NC	35KΩ	
V 20	21AMP4A/	0Ω	470KΩ	PIN 10 ●330KΩ	PIN 11 †200KΩ	PIN 12 .1Ω				
	21ACP4A									

* MEASURED IN "UHF" POSITION.
† MEASURED FROM PIN 2 OF V19.
▲ MEASURED FROM PIN 7 OF V5.
▲MEASURED FROM PIN 3 OF V17.
NC-NO CONNECTION.
TP-TIE POINT.

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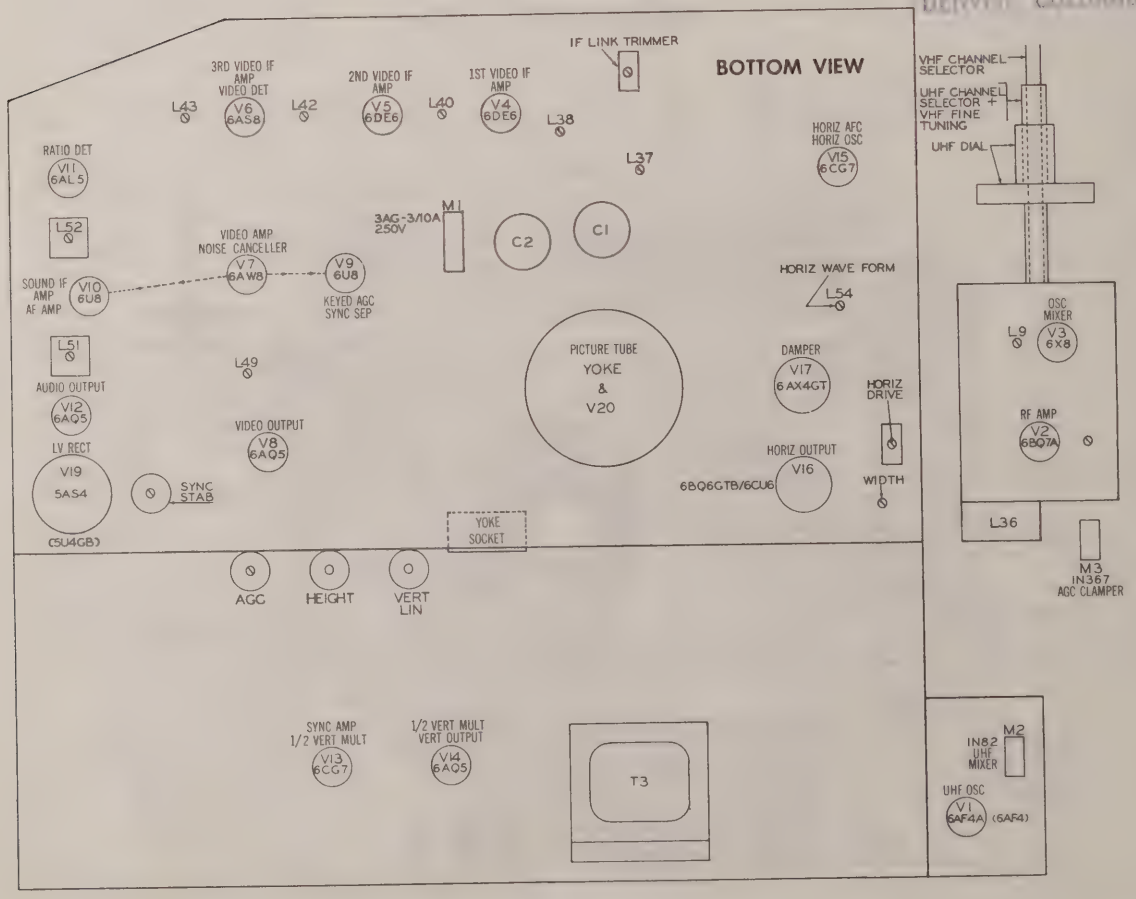
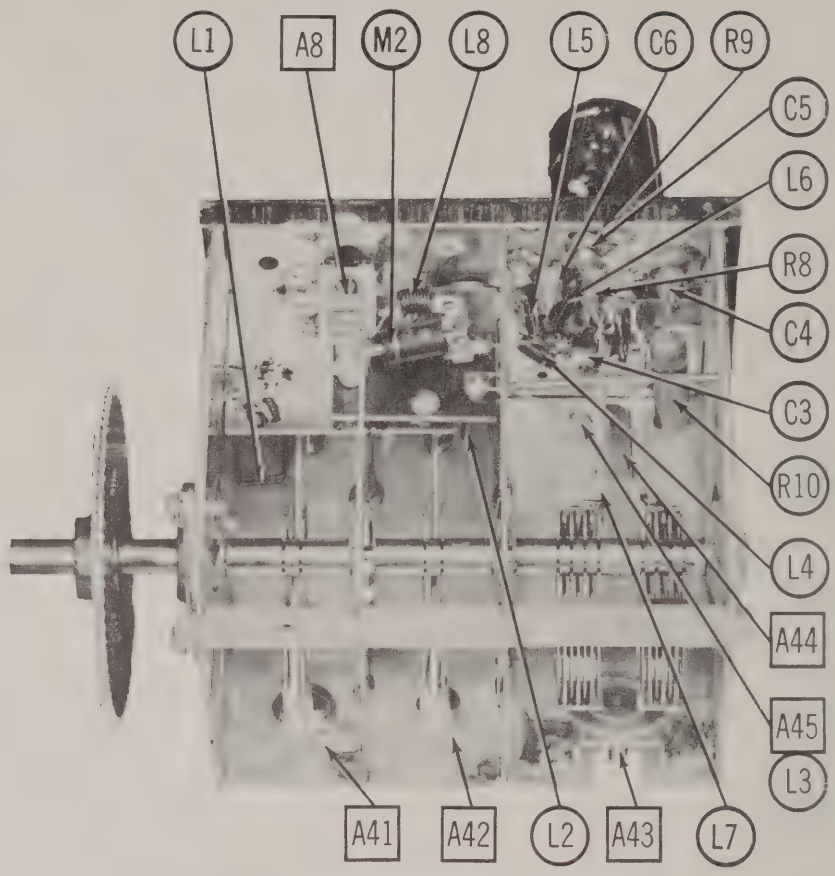
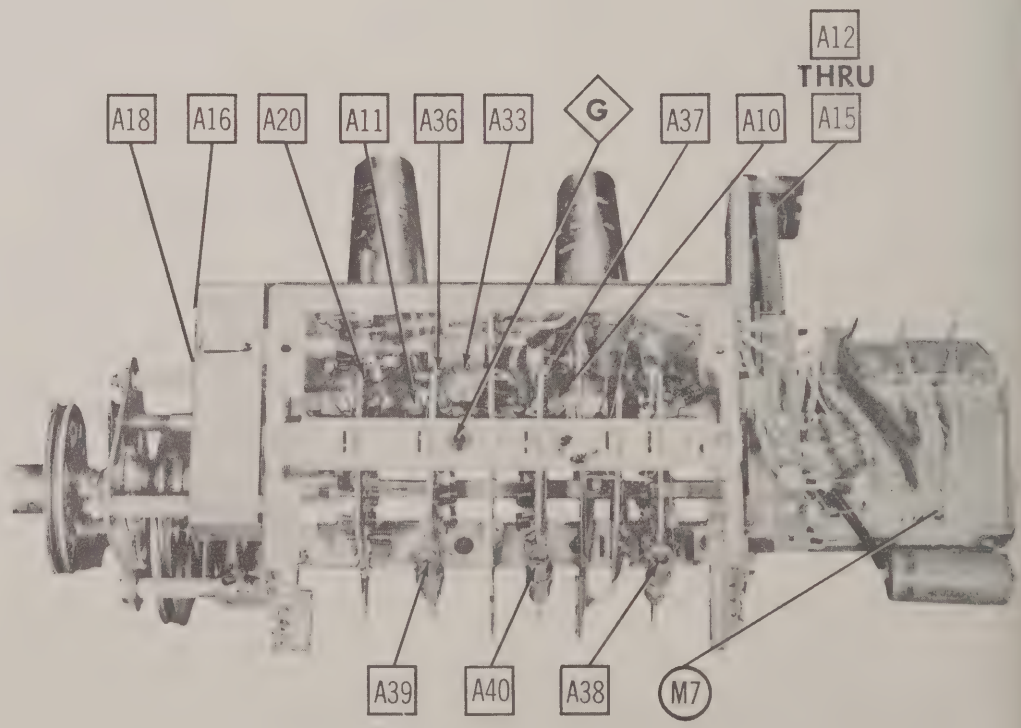
1111 BLAKE ST.
DENVER COLORADO



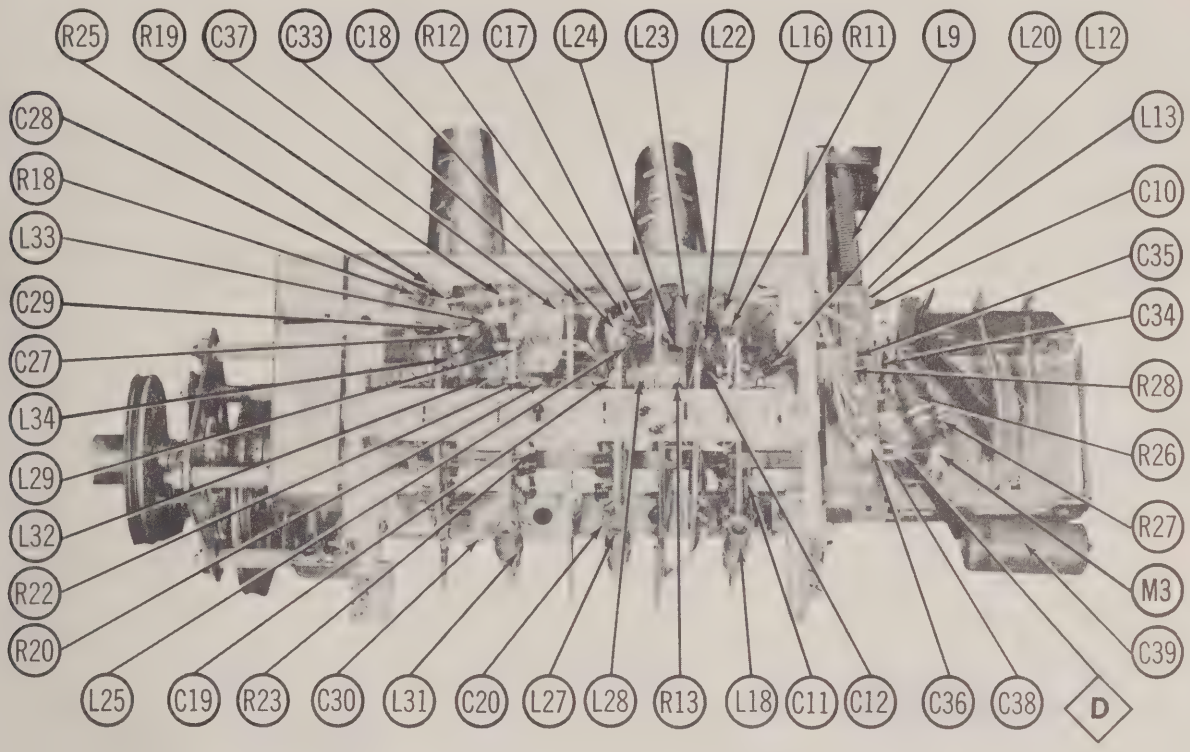
TUBE PLACEMENT CHART



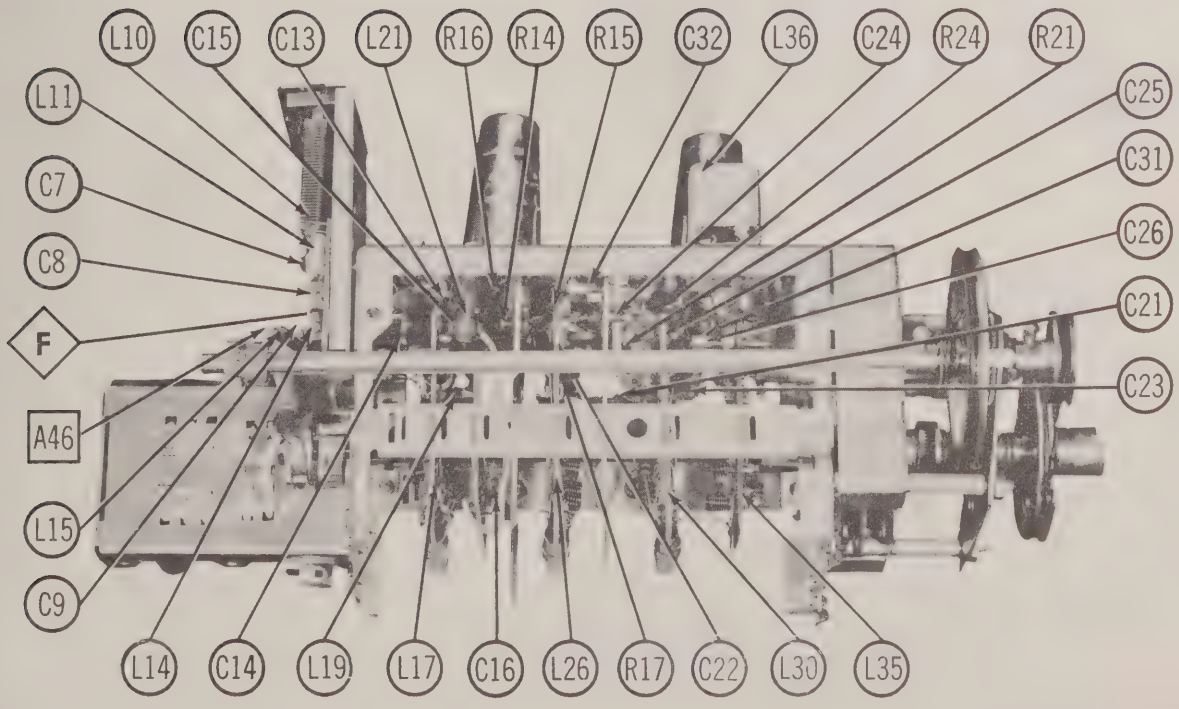
UHF TUNER-RIGHT SIDE



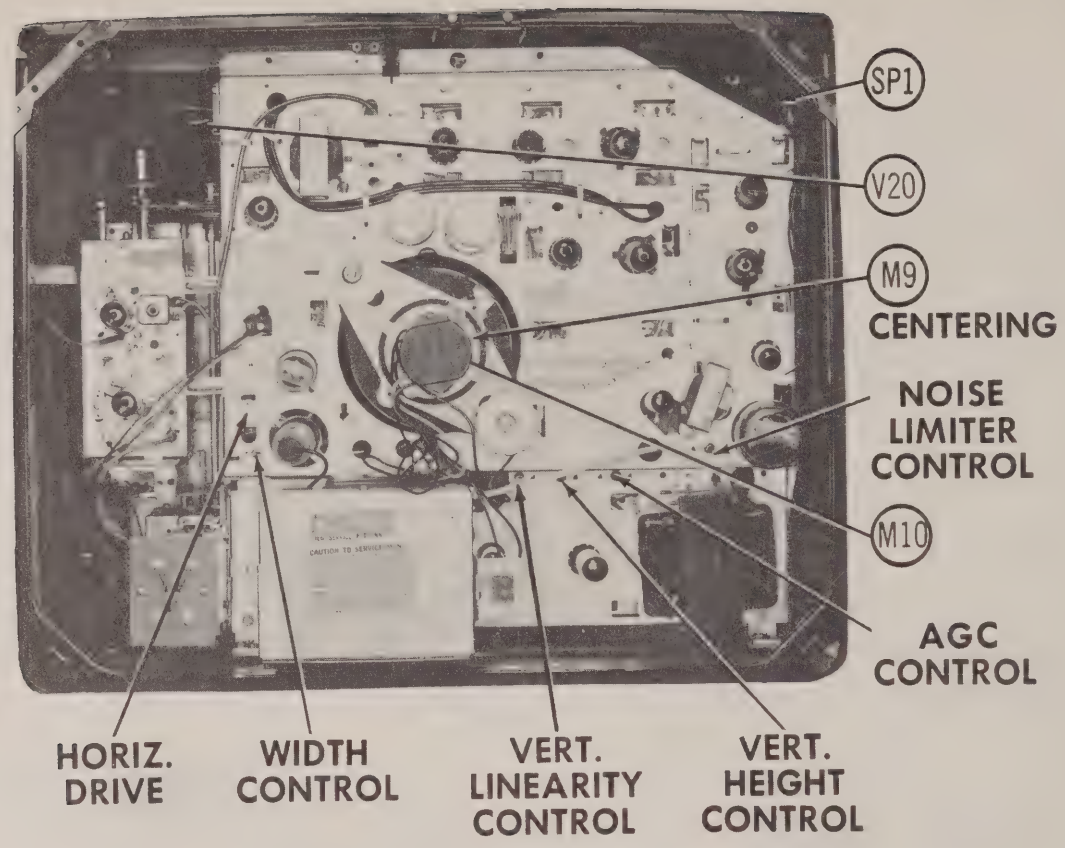
VHF TUNER-RIGHT SIDE ALIGNMENT IDENTIFICATION



VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

(A) CHECK OF HORIZONTAL HOLD ADJUSTMENT

1. Turn the horizontal hold control fully clockwise. Approximately 12 diagonal bars should be sloping downward to the left. Turn the horizontal hold control slowly counter clockwise until 1½ to 3 diagonal bars are present on the screen. The picture should pull in sync upon slight additional rotation of the horizontal hold adjustment and remain in sync for approximately an additional two turns in a counter clockwise direction. Further counter clockwise rotation should cause picture to lose sync with 2 to 5 diagonal bars present before motor boating occurs. Interrupted oscillation (motor boating) should occur before maximum counter clockwise rotation of the horizontal hold adjustment is reached.

2. If the receiver does not pass the above check, turn the horizontal width slug (B3) maximum counter clockwise. Adjust the horizontal drive trimmer (B2) counter clockwise for a bright vertical line near center of the screen then turn clockwise until line disappears. Set brightness control for maximum brightness and adjust B3 for a picture slightly wider than necessary to fill the picture mask horizontally. Adjust the horizontal waveform slug (B1) until 3 or 4 bars are present before motor boating occurs. when the horizontal hold adjustment is turned counter clockwise from the point at which picture loses sync.

3. If the picture still will not sync properly and the AGC control is properly adjusted, it will be necessary to perform the adjustments outlined under "Horizontal Hold and Waveform Alignment".

(B) HORIZONTAL HOLD AND WAVEFORM ALIGNMENT

The horizontal waveform adjustment is adjusted at the factory and normally will require no readjustment.

If the horizontal hold coil (L53) or the horizontal waveform coil (L54) are replaced in set, scope adjustment will be necessary to synchronize the picture.

Short out L54 with a clip lead and turn the horizontal hold slug all the way out. Rotate horizontal hold slug back in coil until picture locks in sync. Remove short from L54. Connect the low capacity probe of an oscilloscope to terminal point L on schematic. Low side to chassis. Adjust the horizontal waveform slug (B1) until the waveform on scope appears similar to Fig. 10. If necessary, during adjustment of B1 keep picture in sync with the horizontal hold control. Remove the oscilloscope from point (L). The sync action should now be as outlined in paragraphs 1 and 2 of "Check of Horizontal Hold Adjustment". If necessary readjust the horizontal drive trimmer and horizontal width slug as in paragraph 2 of "Check of Horizontal Hold Adjustment".

AGC AND SYNC STABILITY CONTROL ADJUSTMENTS

Turn set on and tune in a TV station, preferably a test pattern

Connect the vertical amplifier of an oscilloscope to pin 1 (grid) of video output tube (V8). Connect low side to chassis. Turn the sync stability control (R4) fully counter clockwise. Adjust scope to see video waveform.

From a counter clockwise position turn the AGC control (R5) clockwise until sync tips begin to become compressed, then back counter clockwise just enough to remove compression. If the AGC control is set too far clockwise on a weak signal it may overload when receiving a strong signal.

Set the horizontal hold adjustment as far counter clockwise as possible without making horizontal sync unstable.

Turn R4 clockwise until sync tips begin to become compressed then back counter clockwise just enough to remove compression. Reset the horizontal hold to its center hold range position and remove scope from pin 1 of V8.

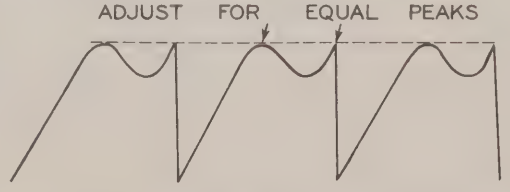
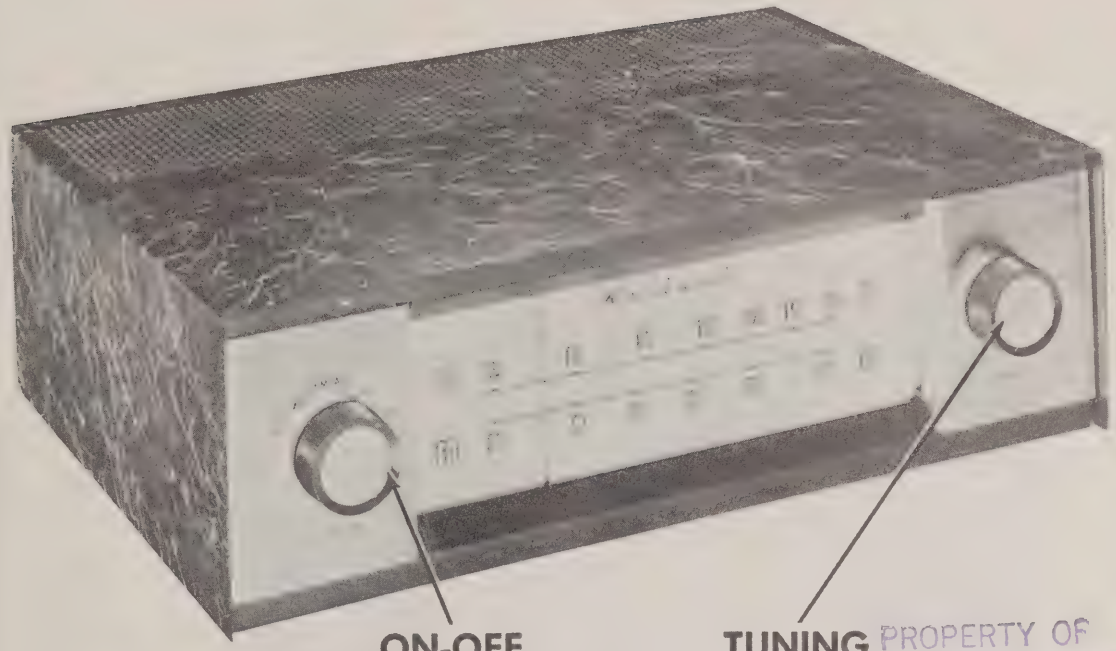


FIG. 10

RAULAND
MODEL HF155



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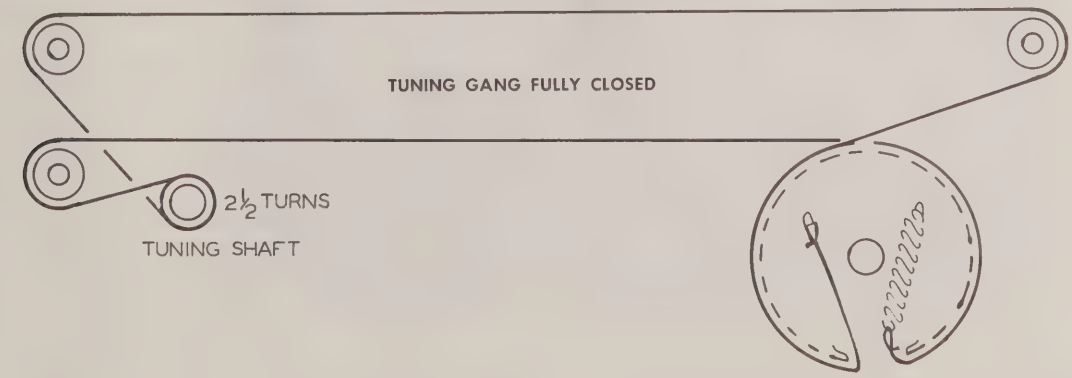
L. F. BLANKENSHIP
DENVER, COLORADO

RAULAND
MODEL HF155

TRADE NAME	Rauland Model HF155		
MANUFACTURER	Rauland-Borg Corp., 3515 W. Addison, Chicago 18, Ill.		
TYPE SET	AC Operated AM-FM Superheterodyne Tuner		
TUBES	Twelve		
POWER SUPPLY	105-125 Volts AC-60 Cycles	RATING	.39 Amp @ 117 Volts AC
TUNING RANGE - BROADCAST	550KC-1630KC	FREQ. MOD.	88MC-108MC



DIAL CORD STRINGING

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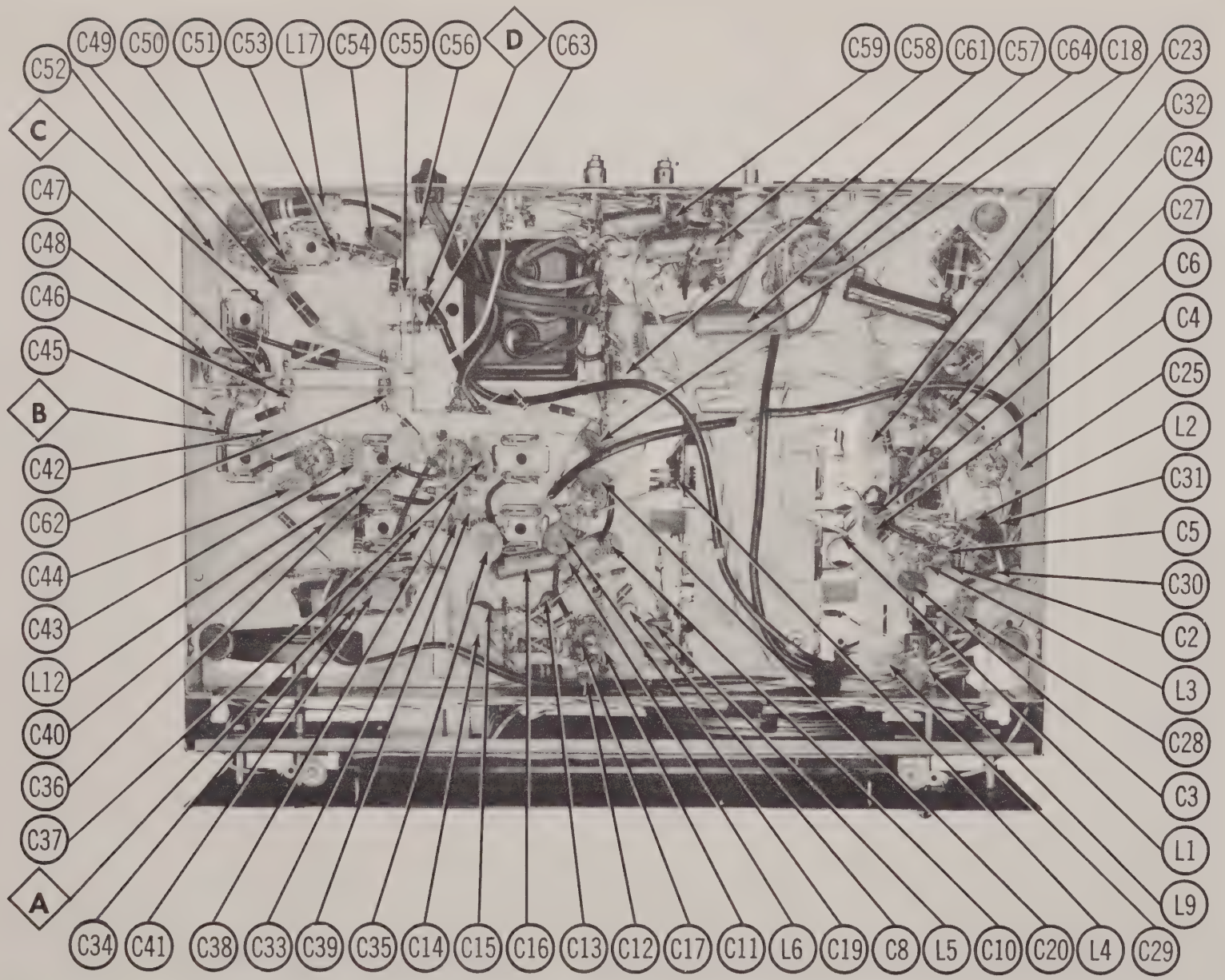
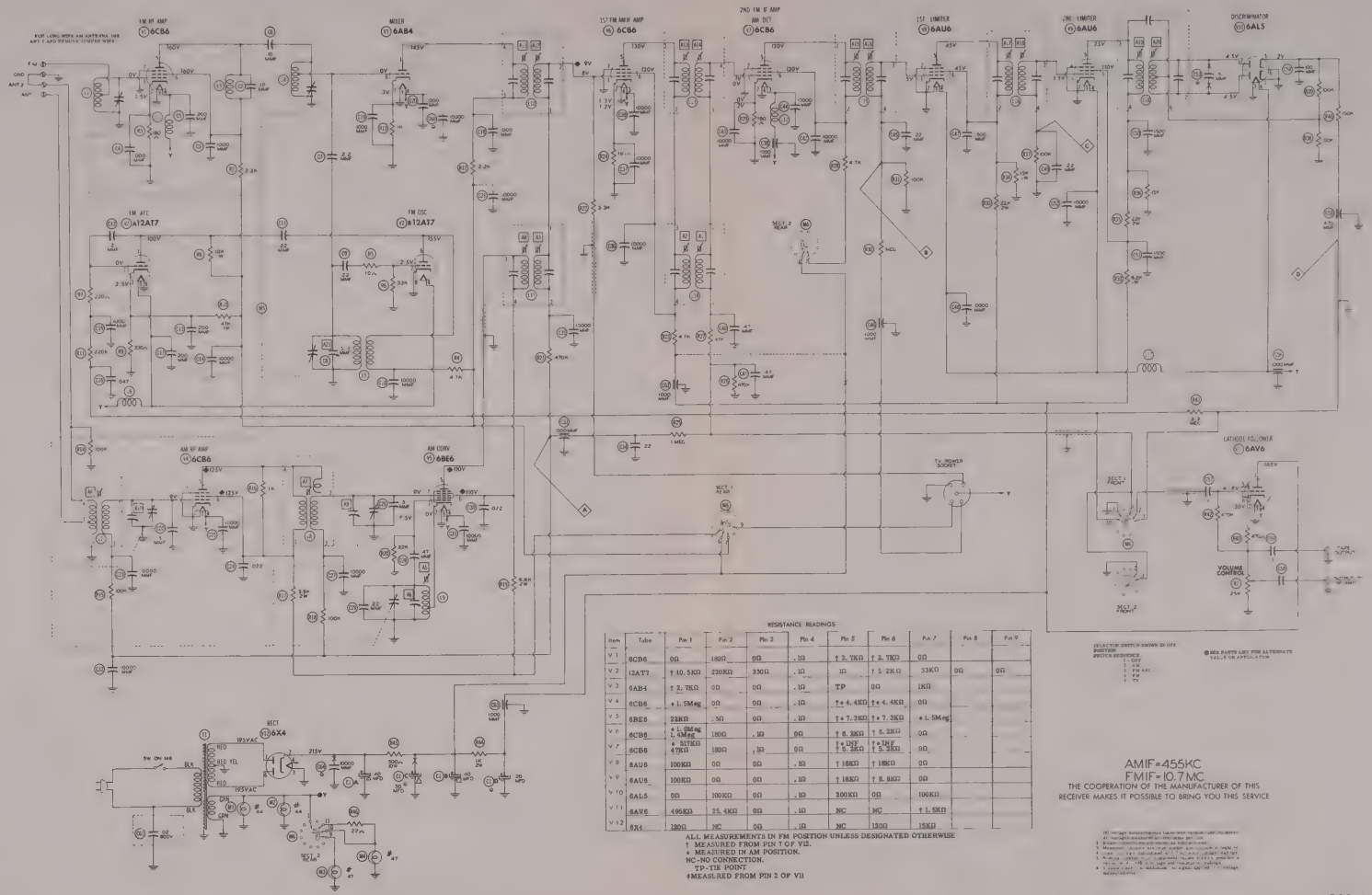


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION


FM RF AMP V1 6CB6
MIXER V7 6AB4
1ST FM AMP IF AMP V6 6CB6
2ND FM IF AMP AM DET V7 6CB6
1ST LIMITER V8 6AU6
2ND LIMITER V9 6AU6
DISCRIMINATOR V10 6AL5
FM AFC V10 a12AT7
FM OSC V7 b12AT7
AM RF AMP V4 6CB6
AM CONV V5 6BE6
CATHODE FOLLOWER V11 6AV6
RECT V12 6X4
TV POWER SOCKET
VOLUME CONTROL
AUDIO OUTPUT
SELECTOR SWITCH SHOWN IN OFF POSITION
SWITCH SEQUENCE
1 - OFF
2 - AM
3 - FM AFC
4 - FM
5 - TV
SEE PARTS LIST FOR ALTERNATE VALUES IN APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	0Ω	180Ω	0Ω	.1Ω	† 2. 7KΩ	† 2. 7KΩ	0Ω		
V 2	12AT7	† 10. 5KΩ	220KΩ	330Ω	.1Ω	1Ω	† 5. 2K Ω	33KΩ	0Ω	0Ω
V 3	6AB4	† 2. 7KΩ	0Ω	0Ω	.1Ω	TP	0Ω	1KΩ		
V 4	6CB6	+ 1. 5Meg	0Ω	0Ω	.1Ω	† + 4. 4KΩ	† + 4. 4KΩ	0Ω		
V 5	6BE6	22KΩ	.5Ω	0Ω	.1Ω	† + 7. 3KΩ	† + 7. 3KΩ	+ 1. 5Meg		
V 6	6CB6	+ 1. 5Meg 1. 5Meg	180Ω	.1Ω	0Ω	† 6. 2KΩ	† 6. 2KΩ	0Ω		
V 7	6CB6	+ 517KΩ 47KΩ	180Ω	.1Ω	0Ω	† UNF † 6. 2KΩ	† + 1KΩ † 5. 2KΩ	0Ω		
V 8	6AU6	100KΩ	0Ω	0Ω	.1Ω	† 16KΩ	† 16KΩ	0Ω		
V 9	6AU6	100KΩ	0Ω	0Ω	.1Ω	† 16KΩ	† 8. 8KΩ	0Ω		
V 10	6AL5	0Ω	100KΩ	0Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 11	6AV6	495KΩ	25. 4KΩ	0Ω	.1Ω	NC	NC	† 1. 5KΩ		
V 12	6X4	130Ω	NC	0Ω	.1Ω	NC	130Ω	15KΩ		

ALL MEASUREMENTS IN FM POSITION UNLESS DESIGNATED OTHERWISE
† MEASURED FROM PIN 7 OF V12.
+ MEASURED IN AM POSITION.
NC-NO CONNECTION.
TP-TIE POINT
#MEASURED FROM PIN 2 OF V11

AMIF=455KC
FMIF=10.7MC
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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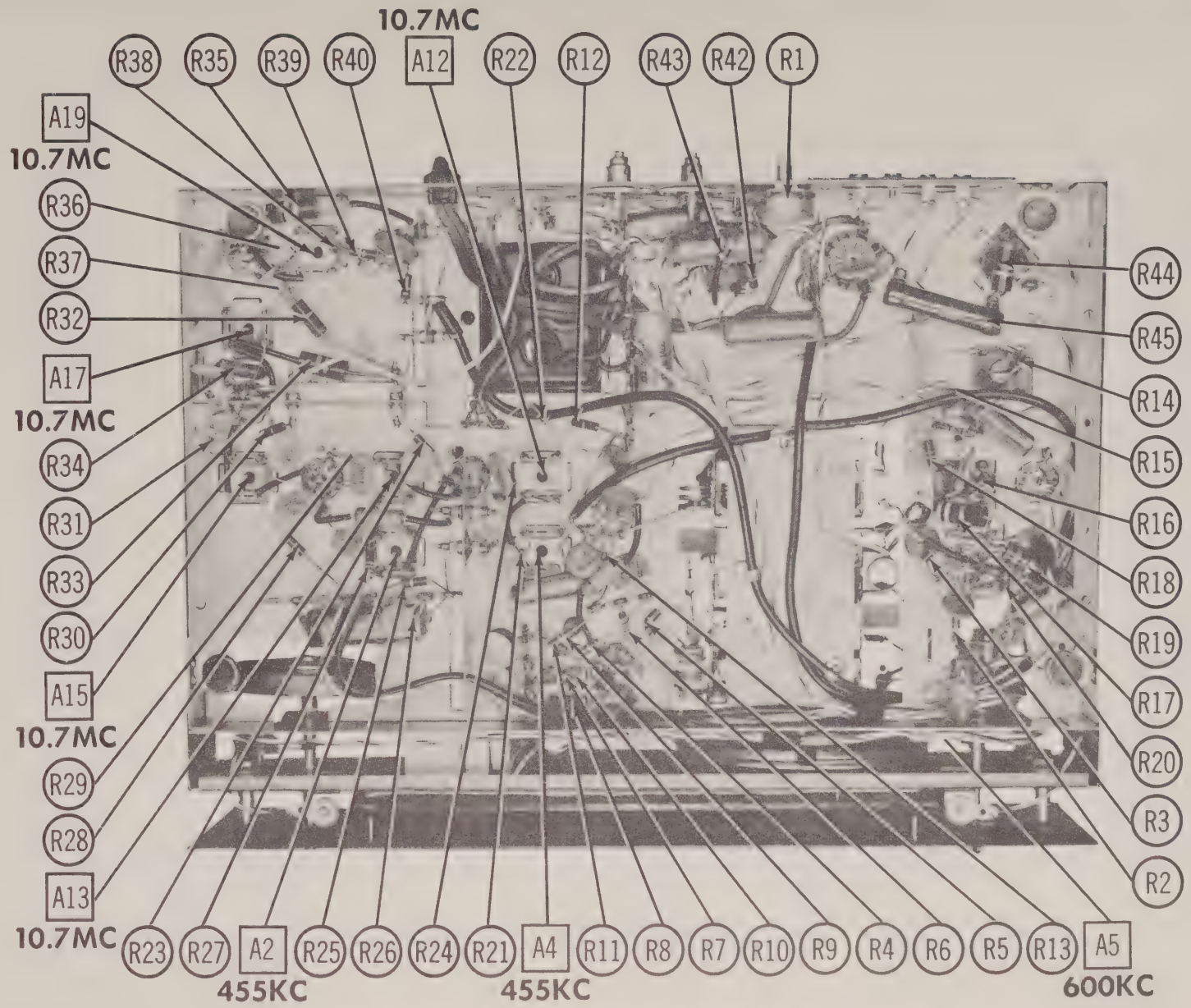
308-11



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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3924 WALNUT
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ALIGNMENT INSTRUCTIONS

PROPERTY OF
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3934 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
To set pointer open tuning gang and align pointer with indicator lights on right end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	455KC (400∿Mod)	AM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	270Ω Carbon Resistor	High side thru 270Ω to AM antenna terminal (AM 1). Low side to chassis.	600KC	"	600KC	"	A5	"
3.	"	"	1500KC	"	1500KC	"	A6	"
4.	"	"	600KC	"	Tune to 600KC signal	"	A7, A8	"
5.	"	"	1500KC	"	Tune to 1500KC signal	"	A9, A10	Adjust for maximum deflection. Repeat steps 4 and 5.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
7.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A17, A18	"
8.	"	"	"	"	"	DC probe to point Ⓓ. Common to chassis.	A19	"
9.	"	"	"	"	"	DC probe to point Ⓓ. Common to chassis.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
10.	"	"	10.725KC 10.675KC	"	"	"	A19	Vary generator frequency 25KC above and below 10.7MC. Meter deflections should be nearly equal above and below 10.7MC. If necessary, retouch A11 thru A18 until nearly equal meter deflections above and below 10.7MC are obtained.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 6 (grid) of 6AB4 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A17, A18	"
8.	"	"	"	"	"	Vert. Amp. to point Ⓓ. Low side to chassis.	A19	"
9.	"	"	"	"	"	"	A20	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A19 for maximum amplitude and straightness of crossover lines. Proceed with alignment in step 11.

FM RF ALIGNMENT

Set VTVM to 5 volt scale.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC	FM	108MC	DC probe to point Ⓓ. Common to chassis.	A21, L5	Adjust for maximum deflection. (L5 is adjusted by compressing or expanding the coil turns.
12.	"	"	88MC	"	88MC	DC probe to point Ⓑ. Common to chassis.	L1, L4	Adjust for maximum deflection by compressing or expanding L1 and L4.

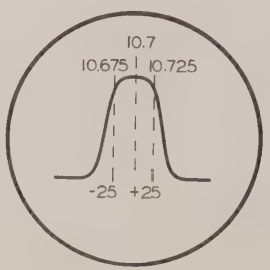


FIG. 1

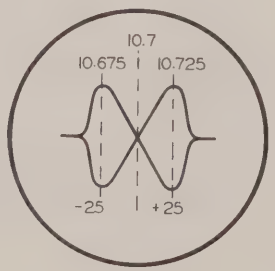


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		RAULAND PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	6CB6	6CB6	7CM	
V2	FM Osc. -AFC	12AT7	12AT7	9A	
V3	Mixer	6AB4	6AB4	5CE	
V4	AM RF Amp.	6CB6	6CB6	7CM	
V5	AM Converter	6BE6	6BE6	7CH	
V6	1st FM/AM IF Amp.	6CB6	6CB6	7CM	
V7	2nd FM IF Amp. - AM Det. -AVC	6CB6	6CB6	7CM	
V8	1st Limiter	6AU6	6AU6	7BK	
V9	2nd Limiter	6AU6	6AU6	7BK	
V10	Discriminator	6AL5	6AL5	6BT	
V11	Cath. Follower	6AV6	6AV6	7BT	
V12	Rect.	6X4	6X4	5BS	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300					TM-4042	D-130	TVL-2575
B	■40	300					TD-20-350	MTD-2520	TVA-2735
C	▲30	250	(Note 1)						
D	20	200	(Note 1)						

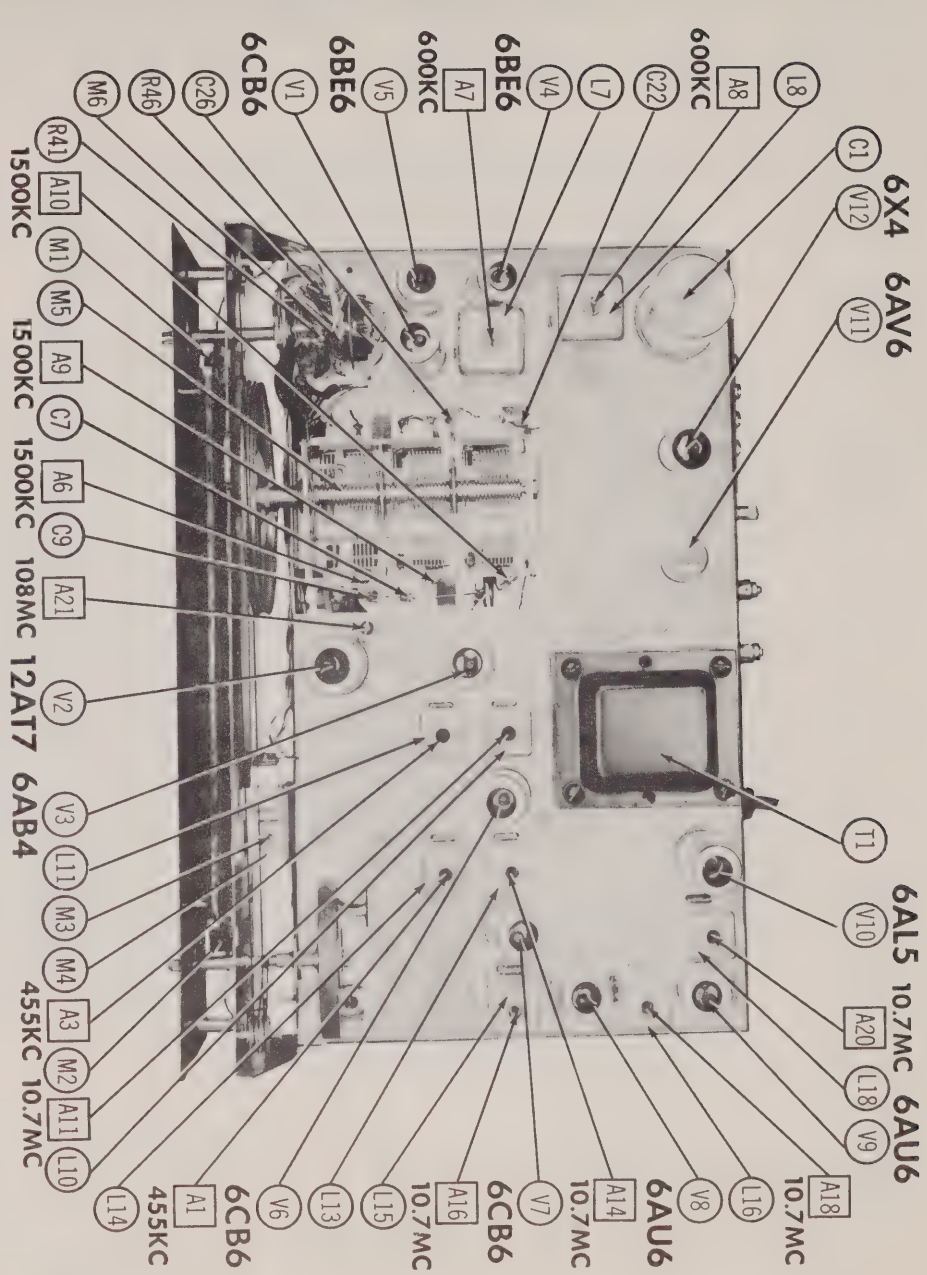
Note 1. When C1D is a 30MFD unit, C1C is not used.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10			NPO-D110	TCZ-10	Z018	NPOA-100	ZT-541	5TCC-Q1	
C3	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C4	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C5	200			BPD-0002	DD-201	GO50	811-201	UC-532	5GA-T2	
C6	10			NPO-S110	TCZ-10	TZ09	NPOA-100	ZT-541	5TCC-Q1	
C7	2.2			NPO-S12.2	TCZ-2R2	TZ05	NPOA-2R2		5TCCB-V22	
C8	.5-3				829-3		3115-01-0R5	CT 565		
C9	22			NPO-D122	TCZ-22	Z024	NPOK-220		5TCC-Q22	
C10	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C11	22			NPO-D122	TCZ-22	Z024	NPOK-220		5TCC-Q22	
C12	2			NPO-S12.2	TCZ-2R2	TZ05	NPOA-2R2		5TCCB-V22	
C13	200			BPD-0002	DD-201	GO50	811-201	UC-532	5GA-T2	
C14	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C15	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C16	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C17	200			BPD-0002	DD-201	GO50	811-201	UC-532	5GA-T2	
C18	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C19	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C20	1000			BPD-001	DD-102	KO69	801-001	DC521	5HK-D1	
C21	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	Note 2
C22	5			NPO-D15	TCZ-4R7	ZO11	NPOA-050	ZT-555	5TCCB-V47	
C23	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C24	.022	200		BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C25	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C26	5			NPO-D15	TCZ-4R7	ZO11	NPOA-050	ZT-555	5TCCB-V47	
C27	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C28	47			NPO-D147	TCZ-47	ZO33	NPO-338-470	ZT-5447	5TCC-Q47	
C29	22			NPO-D122	TCZ-22	ZO24	NPOK-220		5TCC-Q22	
C30	.022	200		BPD-02	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C31	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C32	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C33	1000				FT1000		357-102	FC-5215		
C34	.22	200		P488N-22		CUB4P22		PT4022	4TM-P22	
C35	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C36	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C37	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C38	1000				FT-1000		357-102	FC-5215		
C39	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C40	47			BPD-000047	DD-471	GO33	831-470	UC-5247	5GA-Q47	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C41	47			BPD-000047	DD-471	GO33	831-470	UC-5247	5GA-Q47	
C42	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C43	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C44	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C45	22			NPO-DI22	TCZ-22	ZO24	NPOK-220		5TCC-Q22	
C46	1000				FT-1000		357-102	FC-5215		
C47	1500			BPD-0015	DD-152	KO71	801-0015	DC5215	5HK-D15	
C48	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C49	22			NPO-DI22	TCZ-22	ZO24	NPOK-220		5TCC-Q22	
C50	1500			BPD-0015	DD-152	KO71	801-0015	DC5215	5HK-D15	
C51	1500			BPD-0015	DD-152	KO71	801-0015	DC5215	5HK-D15	
C52	10000			BPD-01	DD-103	KO82	811-01	DC511	5HK-S1	
C53	5			NPO-DI5	TCZ-4R7	ZO11	NPOA-050	ZT-555	5TCCB-V47	Note 2
C54	100			NPO-DI100	TCZ-100	TZ30	NPO-337-101	ZT-531	5TCC-T1	
C55	470				MFT-500					
C56	1000				FT-1000		357-102	FC-5215		
C57	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C58	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C59	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C60	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	Note 2
C61	.02	600								
C62	1000				FT-1000		537-102	FC-5215		
C63	1000				FT-1000		537-102	FC-5215		
C64	10000			BPD-01	DD-103	KO82	811-01	DC-511	5HK-S1	Note 2

Note 2. Not used in some versions.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	RAULAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	25KΩ	½		AB-26♦	A47-25K-S ♦	B11-120	TA253L	Volume
B	Shaft			AK-1	FKS-1/4	TM-2 Kit	Not Req.	Attach to R1A.

♦ Ream control mounting hole to 3/8".

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	RAULAND PART No.	IRC PART No.	NOTES
R2	2200Ω	½		BTS-2200	
R3	180Ω	½		BTS-180	
R4	4700Ω	½		BTS-4700	
R5	10Ω	½		BTS-10	
R6	33KΩ	½		BTS-33K	
R7	220Ω	½		BTS-220	
R8	10KΩ	1		BTA-10K	
R9	330Ω	½		BTS-330	
R10	47KΩ	1		BTA-47K	
R11	220KΩ	½		BTS-220K	
R12	2200Ω	½		BTS-2200	
R13	1000Ω	½		BTS-1000	
R14	100KΩ	½		BTS-100K	
R15	100KΩ	½		BTS-100K	
R16	1000Ω	½		BTS-1000	
R17	3900Ω	2		BTB-3900	
R18	100KΩ	½		BTS-100K	
R19	6800Ω	2		BTB-6800	
R20	22KΩ	½		BTS-22K	
R21	470KΩ	½		BTS-470K	
R22	3300Ω	½		BTS-3300	
R23	4700Ω	½		BTS-4700	
R24	180Ω	½		BTS-180	
R25	1Meg	½		BTS-1Meg	
R26	470KΩ	½		BTS-470K	
R27	47KΩ	½		BTS-47K	
R28	4700Ω	½		BTS-4700	
R29	180Ω	½		BTS-180	
R30	1Meg	½		BTS-1Meg	
R31	100KΩ	½		BTS-100K	
R32	8200Ω	1		BTA-8200	
R33	22KΩ	2		BTB-22K	
R34	15KΩ	1		BTA-15K	
R35	22KΩ	2		BTB-22K	
R36	15KΩ	½		BTS-15K	
R37	100KΩ	½		BTS-100K	
R38	100KΩ 5%	½		BTS-100K 5%	
R39	100KΩ 5%	½		BTS-100K 5%	
R40	150KΩ	½		BTS-150K	
R41	3.3Meg	½		BTS-3.3Meg	
R42	470KΩ	½		BTS-470K	
R43	470Ω	½		BTS-470	
R44	1000Ω	2		BTB-1000	
R45	500Ω	10		PW10-500	
R46	22Ω	½		BTS-22	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RAULAND PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .39A	396VCT .052ADC	6.3VAC @ 2A		LP-0244					

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	RAULAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω		LW-0096				Tapped
L2	Fil. Choke	.44Ω			19-1000		4602	.68 Microhenries
L3	RF Coil	3Ω			19-1003		4608	3.3 Microhenries, IRC Part No. CLA Tapped
L4	FM RF Coil	0Ω						
L5	FM Osc. Coil	0Ω	0Ω					
L6	Fil. Choke	.44Ω			19-1000		4602	.68 Microhenries
L7	BC Ant. Coil	3.4Ω *	5Ω	LW-0073				* Tapped @ .1Ω
L8	BC RF Coil	103Ω	5.5Ω	LW-0074				
L9	BC OSc. Coil	5.3Ω		LL-0049	14-1040 ■	BC-387	71-Osc.	Tapped @ .4Ω
L10	1st FM IF	.7Ω	.4Ω	LR-0030	16-3487	FM-254	1463	
L11	1st AM IF	15Ω	15Ω	LR-0024	16-6758	BC-352	12-C1	
L12	Fil. Choke	.44Ω			19-1000		4602	.68 Microhenries
L13	2nd FM IF	1.2Ω	.4Ω	LR-0029	16-3490			
L14	2nd AM IF	15Ω	15Ω	LR-0024	16-6758	BC-353	12-C2	
L15	3rd FM IF	1.2Ω	.4Ω	LR-0028	16-3490			
L16	FM Limiter	1.2Ω	.4Ω	LR-0028	16-3490			
L17	Fil. Choke	.44Ω			19-1000		4602	.68 Microhenries
L18	Discriminator	.9Ω	1.2ΩCT	LQ-0178	17-3491	FM-253	1464	

■ Use secondary winding.
▲ Use primary winding.

MISCELLANEOUS

ITEM No.	PART NAME	RAULAND PART No.	NOTES
M1	Pilot Light		#44
M2	Pilot Light		#44
M3	Dial Light		#47, AM Dial
M4	Dial Light		#47, FM Dial
M5	Tuning Cap.	CV-102B	6 Gang, AM Sections of Tuning Gang (21-430MMF; 21-420MMF,: 15-185MMF)
M6	Switch		On-Off, Selector (Rotary-Wafer Type)

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SIVERTONE MODEL 5115-2 (Ch. 549.16005)

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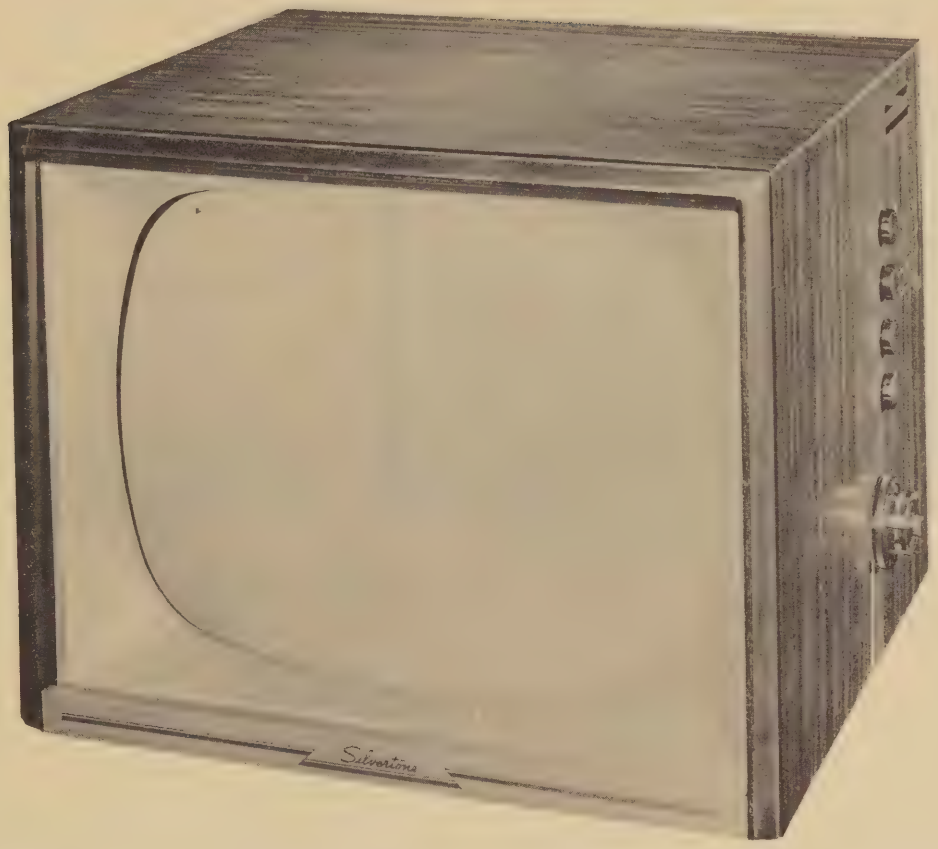

SIVERTONE MODEL 5115-2 (Ch. 549.16005)

TRADE NAME	Silvertone Model 5115-2 (Ch. 549.16005)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.2 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 16
Parts List and Descriptions 12, 13, 14
Photographs
Cabinet-Rear View 16
Capacitor Identification 3, 10
Chassis-Top View 7
RF Tuner 11, 15, 16
Resistor Identification 4, 9
Photographs (Cont.)
Trans., Inductor & Alignment Identification 7
Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Circuits) 11
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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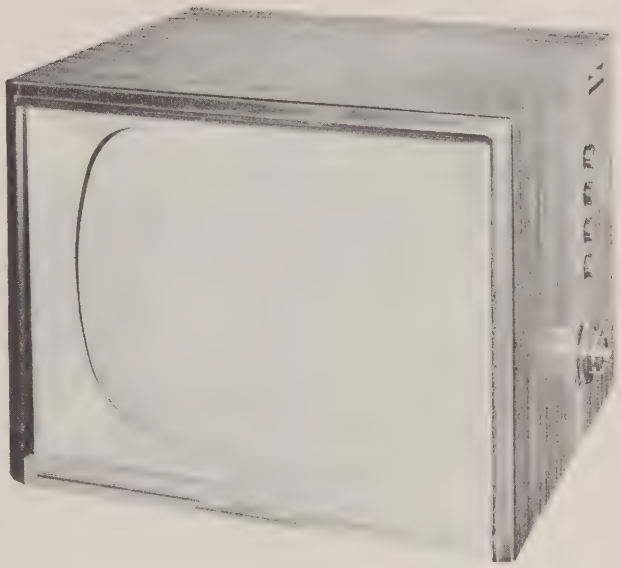
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from side panel of cabinet.
2. Remove 5 wood screws. Remove rear cover.
3. Disconnect speaker leads.
4. Remove 1 wood screw holding antenna bracket.
5. Remove 2 wood screws holding top chassis brace.
6. Remove 6 chassis mounting board bolts. Lift cabinet up and off of chassis mounting board.
7. Remove 2 wing nuts. Remove speaker.



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MODEL

5115-2 (Ch. 549.16005)

SIVERTONE MODEL
5115-2 (Ch. 549.16005)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of VHF Tuner Oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See Disassembly Instructions).

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 5 wood screws holding plastic strip at the top edge of the safety glass. Remove plastic strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See Tube Placement Chart on Page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator it is necessary to remove the rear cover and supply power to the set.

Adjustment is located on top of the chassis.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, it is necessary to remove the rear cover and supply power to the set. Adjust the buzz control (R8) for maximum volume and MINIMUM buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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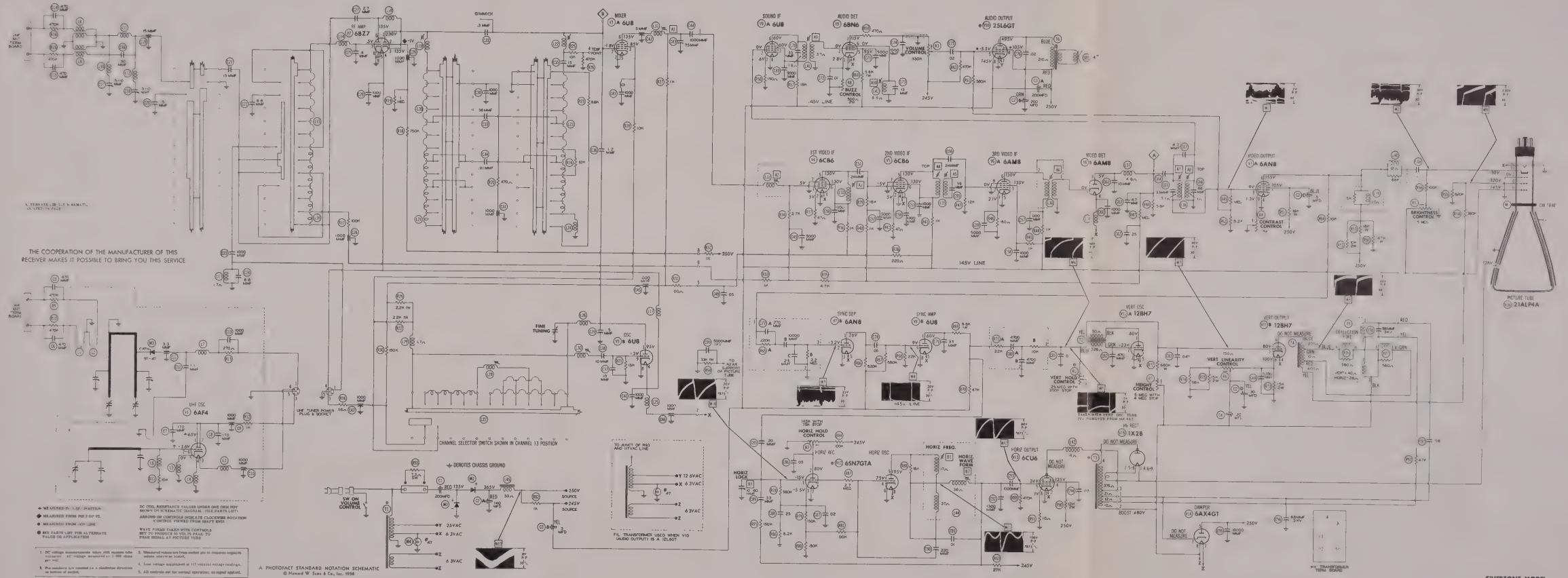
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SOUND IF V8 A 6U8
AUDIO DET V9 6BN6
AUDIO OUTPUT V10 25L6GT
1ST VIDEO IF V4 6CB6
2ND VIDEO IF V5 6CB6
3RD VIDEO IF V6 A 6AM8
VIDEO DET V7 B 6AM8
VIDEO OUTPUT V1 A 6AN8
MIXER V1 A 6U8
OSC V1 B 6U8
UHF OSC V1 6AF4
SYNC SEP V8 6AN8
SYNC AMP V8 B 6U8
VERT OSC V11 A 12BH7
VERT OUTPUT V17 B 12BH7
HORIZ AFC V12 6SN7GTA
HORIZ OSC
HORIZ FREQ.
HORIZ WAVE FORM
HORIZ OUTPUT V13 6CU6
DAMPER 6AX4GT
1X2B
PICTURE TUBE V20 21ALP4A
145V LINE
245V LINE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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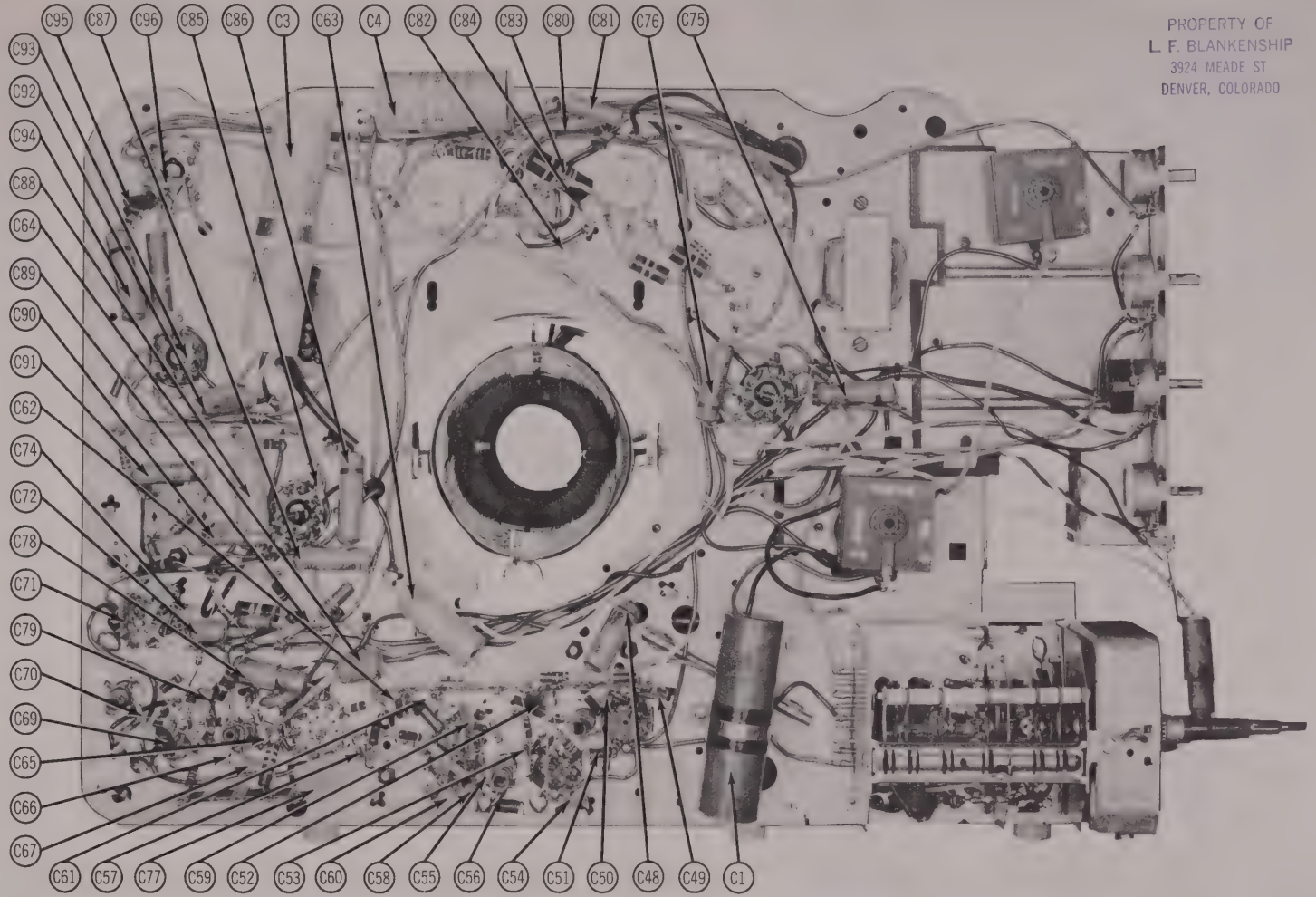
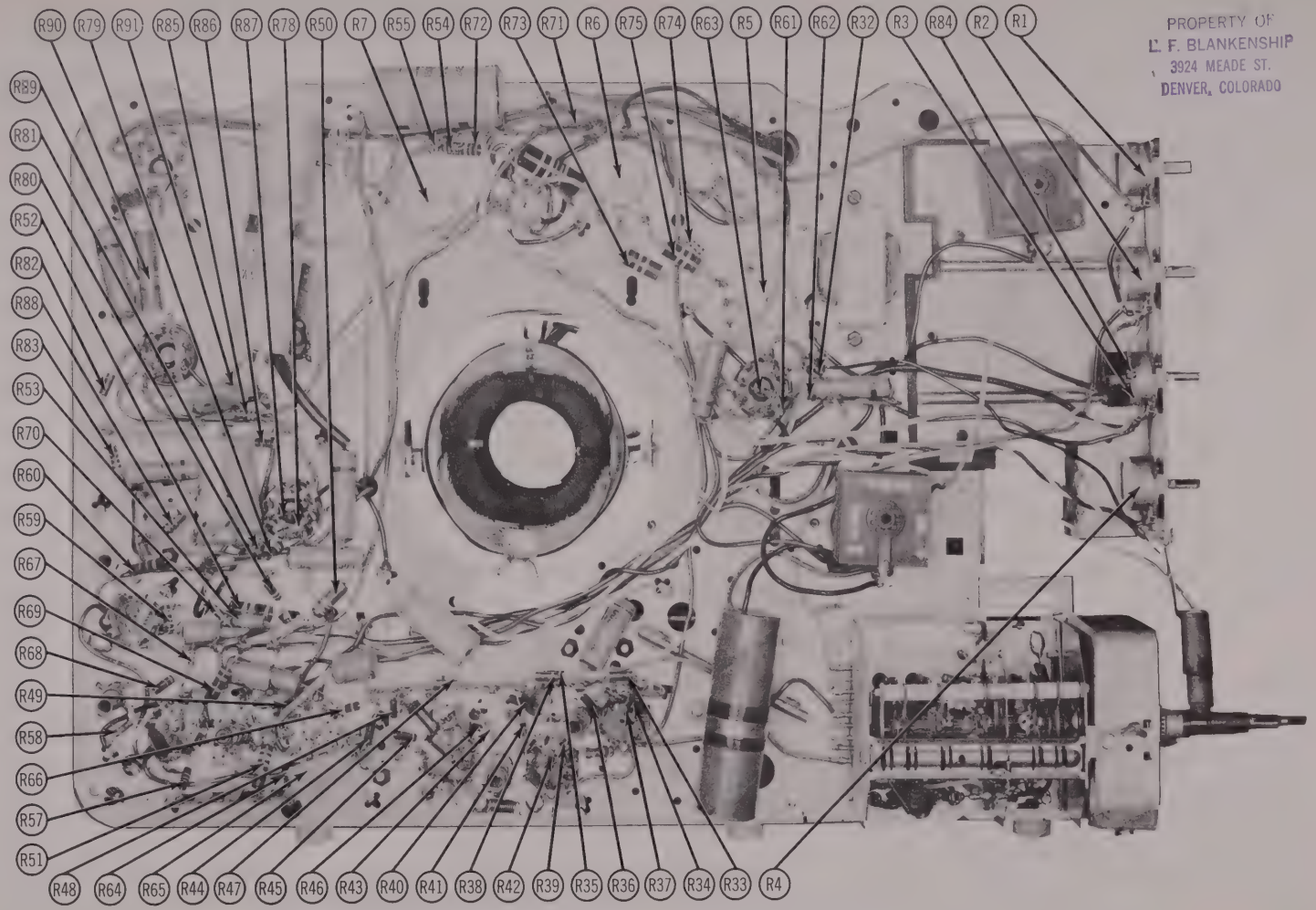
SILVERTONE MODEL
5115-2 (Ch. 549.16005)



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

SILVERTONE MODEL
5115-2 (Ch. 549.16005)



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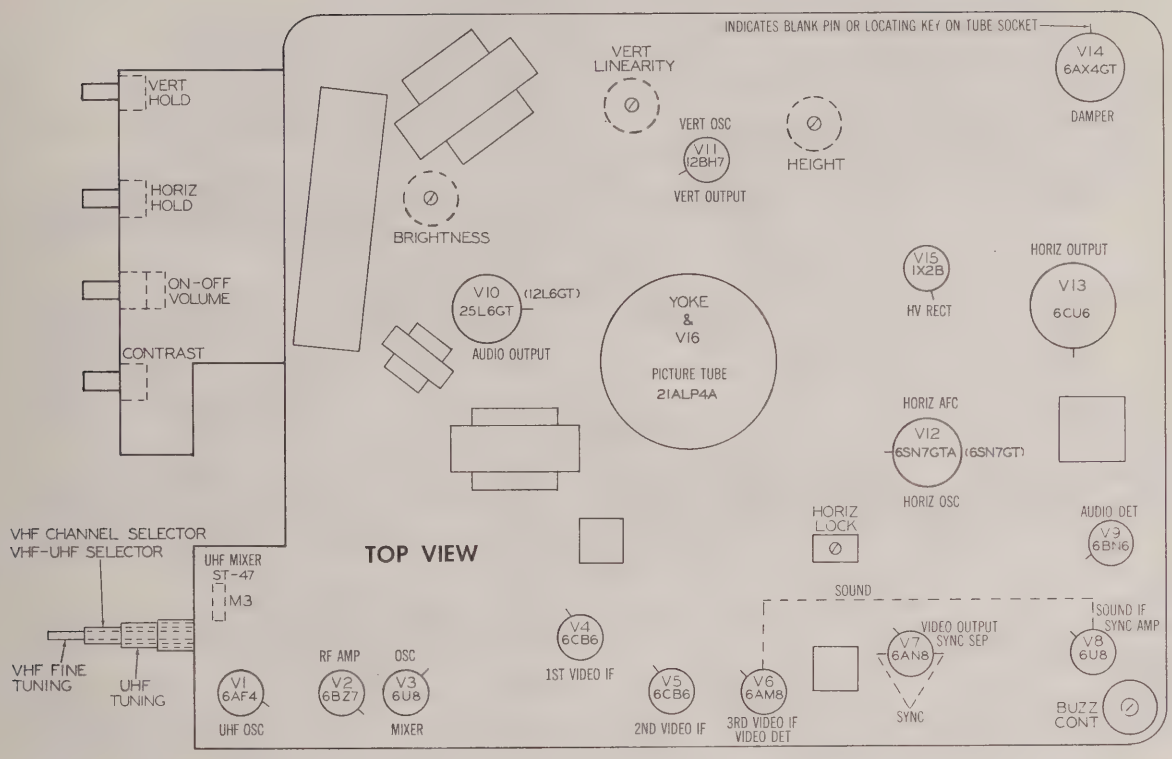
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V10 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V16**
Has pic, no sound - **V8, V9, V10**

SYNC FAILURE
No vert. sync - **V8, V11**
No horiz. sync - **V8, V12**
No vert. or horiz. sync - **V7, V8**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16**
No vertical deflection - **V11**
Poor vert. linearity or foldover - **V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V15, M1, M2**
Vert. off freq. - **V8, V11**
Horiz. off freq. - **V8, V12**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment. The high voltage shock hazard may be eliminated by removing 6AX4 damper tube and connecting a 2250Ω, 30 watt resistor from pin 6 of the 6AX4 socket to chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to the ungrounded side of C63. Connect the positive lead to chassis. Two peaks may occur during alignment of the Video IF coils. Use the peak with the slug entering the coil from the end nearest the chassis. The sound trap (A5) should be turned with the slug entering the coil from the end away from the chassis. Use only enough sweep generator output for useable pattern on the scope. If sweep generator has no built-in marker, loosely couple a separate marker generator to sweep generator output.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to point Ⓑ. Low side to chassis.	44MC (10MC Swp.)	41.25MC 45.75MC	Any unused channel	Vert. Amp. thru detector probe (Fig.1) to pin 5 (plate) of first video IF amp. tube (V4). Low side to chassis.	A1, A2	Adjust A1 and A2 for response curve similar to Fig. 2 with marker in proper position. Remove scope and detector from pin 5 of V4.
2.	"	"	"	41.25MC 42.5MC 45.75MC	"	Vert. Amp. thru 3.3KΩ to point Ⓐ. Low side to chassis.	A3, A4, A5, A6	Adjust for response curve similar to Fig. 3. Adjust A5 for MINIMUM amplitude at 41.25MC. A3 affects the high frequency end of the response curve and A4 affects the low frequency side. A6 affects center of response curve. Adjust A6 for maximum amplitude and MINIMUM tilt.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	.001MFD	High side to point Ⓐ. Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any unused channel	Vert. Amp. thru detector probe (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A7	Rotate contrast control fully clockwise. Adjust A8 completely out of coil. Then adjust A7 for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Set volume control for normal volume. Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (400∿ Mod.) (50KC Swp.)	4.5MC	Any non-interfering channel	Across secondary of sound output transformer (T8).	A10	Set buzz control (R8) 90 degrees from maximum clockwise rotation. Adjust A10 for maximum 400∿ indication on scope.
5.	"	"	"	"	"	"	A8, A9	Attenuate generator output so that signal level is below the limiting level of the 6BN6 as evidenced by back ground hiss and noise. Adjust A8 and A9 for maximum response on scope.
6.	"	"	Not used	4.5MC (400∿ Mod.)	"	"	R8	Use high signal generator output and adjust R8 for MINIMUM 400∿ indication on scope.
7.	"	"	4.5MC (400∿ Mod.) (50KC Swp.)	4.5MC	"	"	A10	With volume control at low level, retouch A10 for maximum 400∿ indication on scope. Remove test equipment. Connect antenna and tune in weakest station in that area and retouch R10 for MINIMUM buzz and hiss. Tune in strongest TV station in that area and adjust A10 for clearest sound.

VHF TUNER ALIGNMENT

The VHF tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

The UHF tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

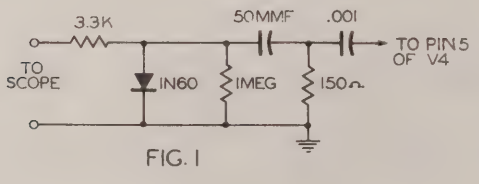


FIG. 1

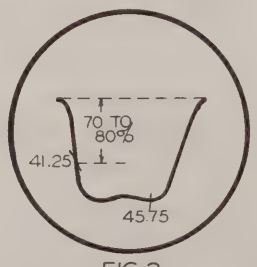


FIG. 2

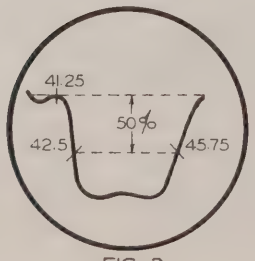


FIG. 3

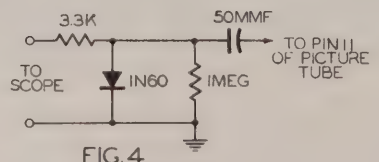
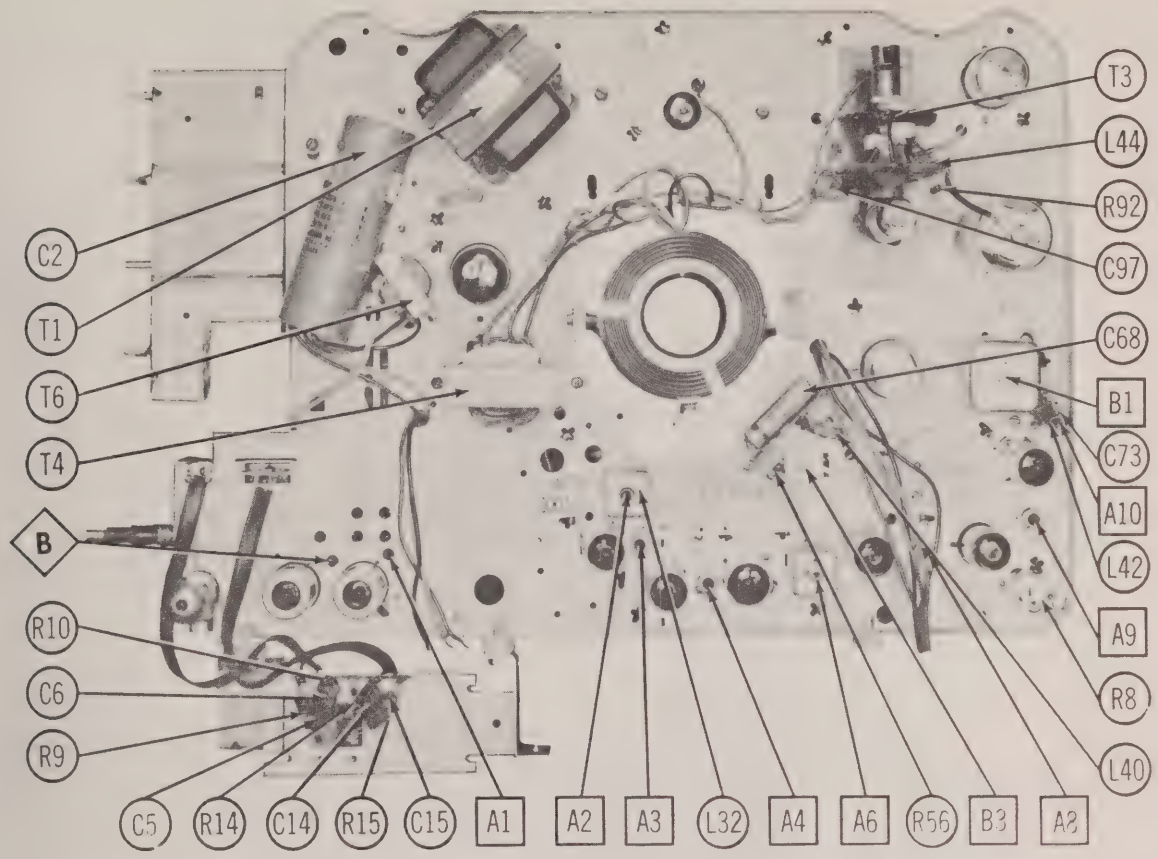
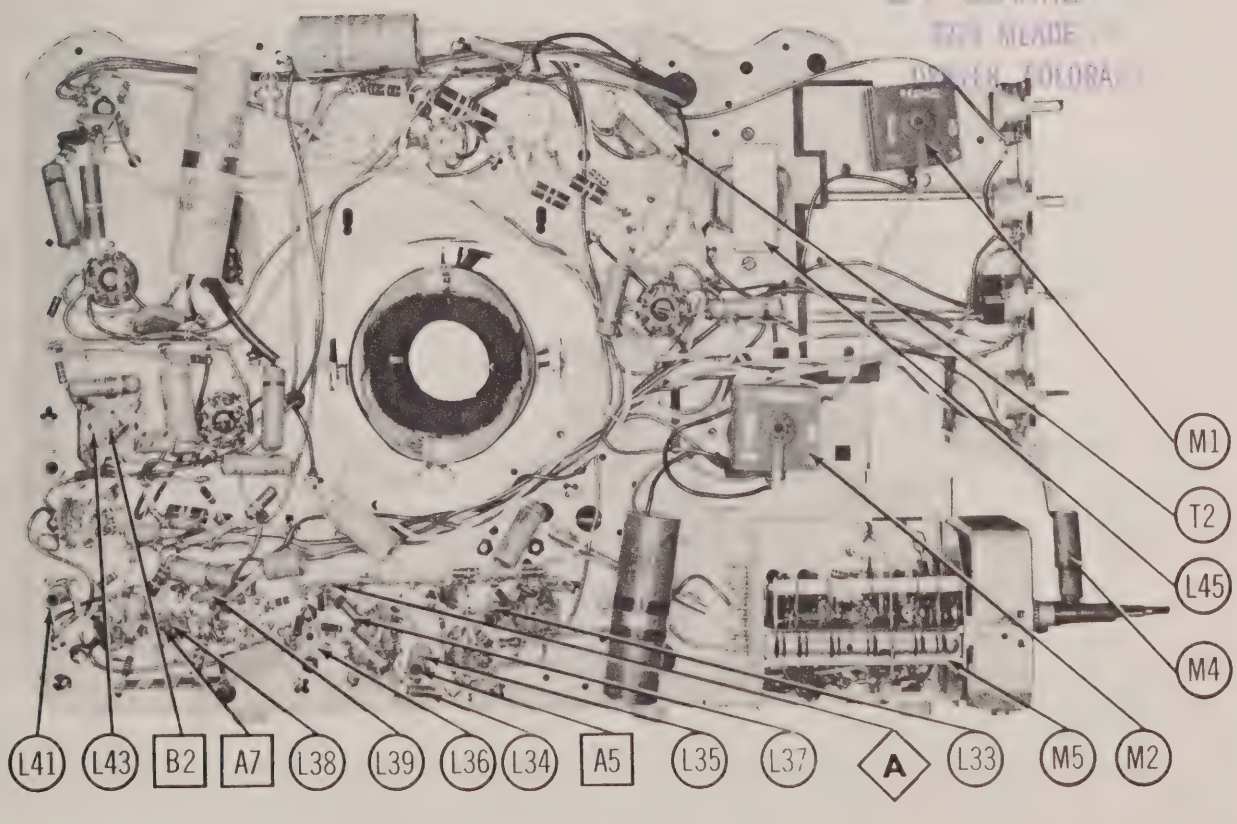


FIG. 4



CHASSIS TOP VIEW

PROPERTY
OF BLANKE
TOY MEADE
DENVER, COLORADO

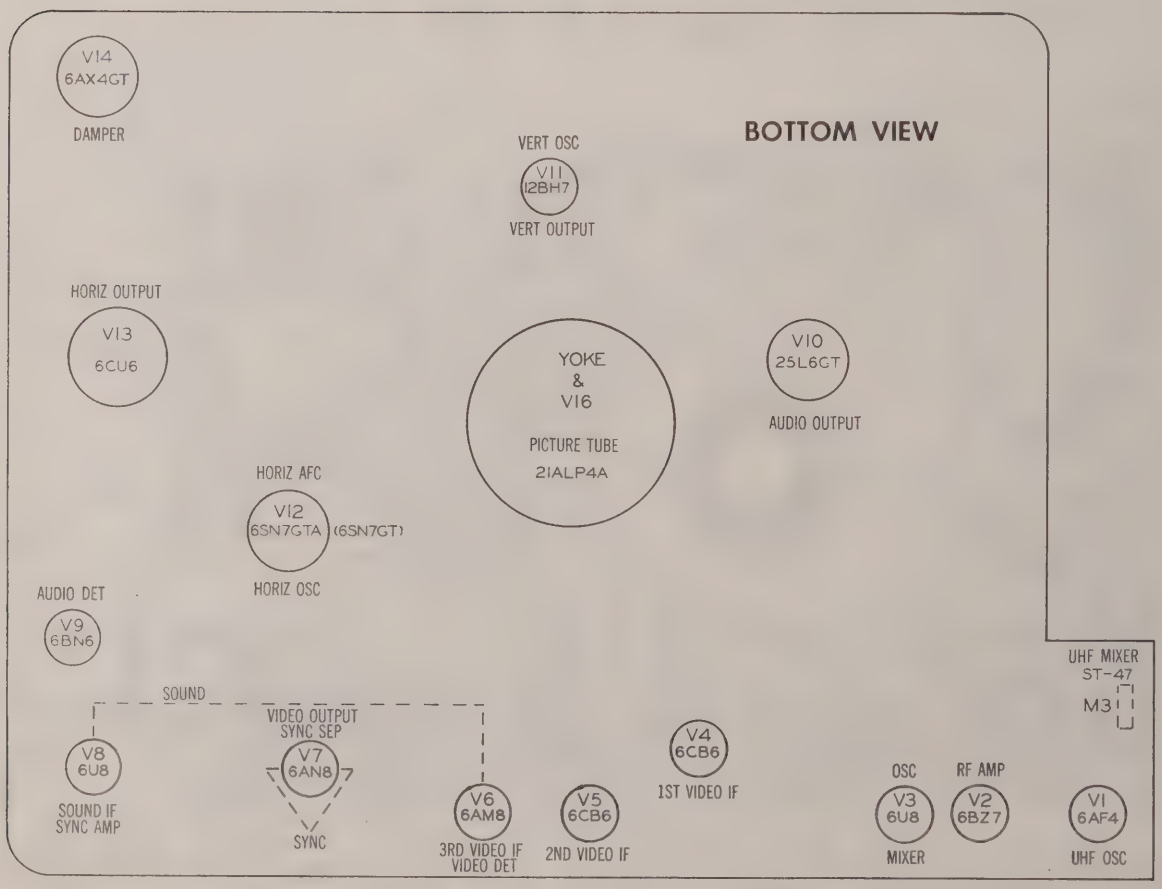


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

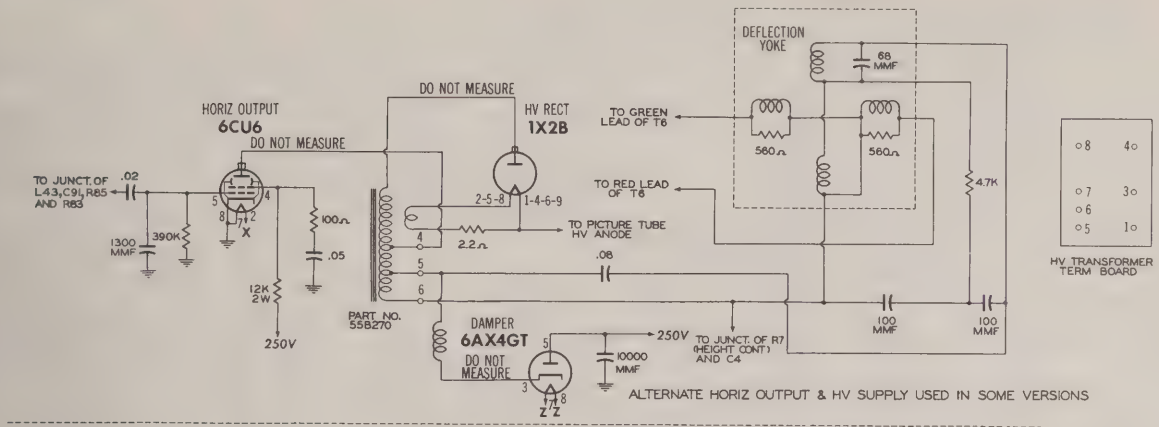
RESISTANCE MEASUREMENTS

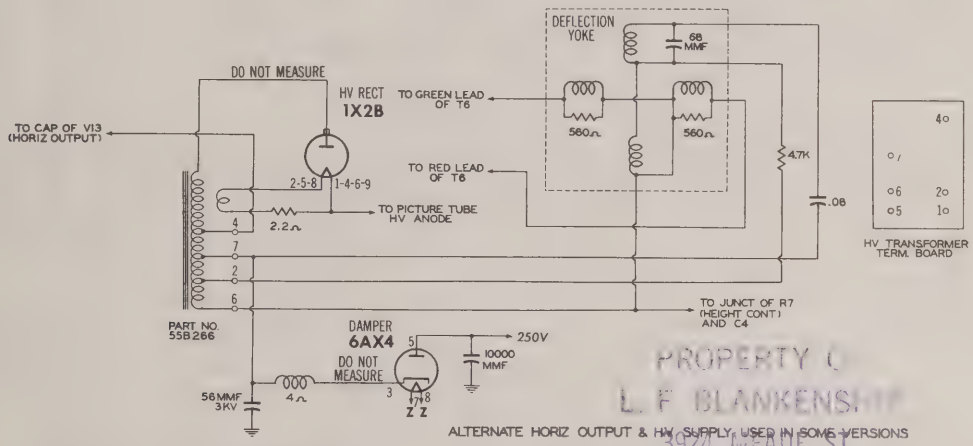
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	*■ 5. 5KΩ	10KΩ	. 1Ω	0Ω	0Ω	10KΩ	*■ 5. 5KΩ		
V 2	6BZ7	† 1. 5KΩ	450KΩ	INF	. 1Ω	0Ω	INF	1Meg	0Ω	0Ω
V 3	6U8	■ 2. 3KΩ	500KΩ	■ 15KΩ	. 1Ω	0Ω	■ 1. 1KΩ	0Ω	0Ω	15KΩ
V 4	6CB6	1Meg	47Ω	. 1Ω	0Ω	■ 1. 2KΩ	■ 1. 2KΩ	0Ω		
V 5	6CB6	1Meg	47Ω	. 1Ω	0Ω	■ 1KΩ	■ 1KΩ	0Ω		
V 6	6AM8	180Ω	12KΩ	■ 1KΩ	. 1Ω	0Ω	■ 1KΩ	. 2Ω	5. 6KΩ	0Ω
V 7	6AN8	■ 820KΩ	2. 2Meg	0Ω	0Ω	. 1Ω	† 6KΩ	† 39KΩ	1Meg	90Ω
V 8	6U8	■ 12KΩ	1Ω	■ 18KΩ	0Ω	. 1Ω	■ 18KΩ	150Ω	0Ω	22KΩ
V 9	6BN6	300Ω	3. 7Ω	0Ω	. 1Ω	■ 5. 6KΩ	5. 5Ω	† 330KΩ		
V 10	25L6GT	TP	0Ω	† 265Ω	† 53Ω	270KΩ	TP	1. 6Ω	50KΩ	
V 11	12BH7	▲ 2. 5Meg	550KΩ	0Ω	. 1Ω	. 1Ω	▲ 1. 3KΩ	▲ 2. 5Meg	7KΩ	0Ω
V 12	6SN7GTA	750KΩ	† 60KΩ	300KΩ	250KΩ	† 28KΩ	0Ω	0Ω	. 1Ω	
V 13	6CU6	NC	. 1Ω	TP	† 12KΩ	470KΩ	NC	0Ω	10Ω	TOP CAP ▲ 25Ω
V 14	6AX4GT	NC	NC	150KΩ	NC	† 53Ω	TP	150KΩ	150KΩ	
V 15	1X2B		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 400Ω
V 16	21ALP4A	0Ω	0Ω	PIN 6 50KΩ	PIN 10 ▲ 390KΩ	PIN 11 ■ 330KΩ	PIN 12 . 1Ω			

* MEASURED IN "UHF" POSITION.
■ MEASURED FROM 145V LINE.
† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM PIN 3 OF V14.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART





A PHOTOFACT STANDARD NOTATION SCHEMATIC
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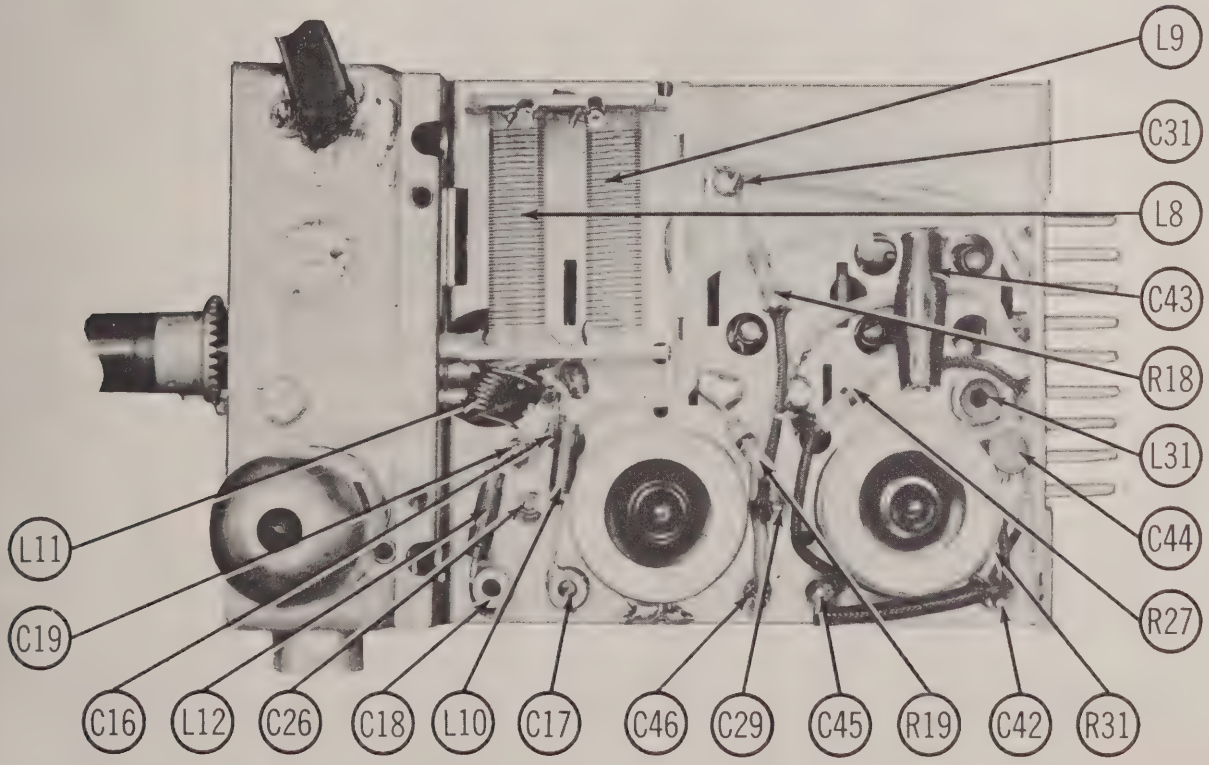
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALTERNATE HORIZ. OUTPUT & H. V. SUPPLY CIRCUIT



RF TUNER TOP VIEW

SET 308 FOLDER 12

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	UHF Osc.	6AF4	6AF4	TDM	
V2	RF Amp.	6BZ7	6BZ7	9AJ	
V3	Osc. Mixer	6U8	6U8	9AE	
V4	1st Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp. Video Det.	6AM8	6AM8	9CY	
V7	Video Output - Sync Sep.	6AN8	6AN8	9DA	
V8	Sound IF Amp. - Sync Amp.	6U8	6U8	9AE	
V9	Audio Det.	6BN6	6BN6	TEF	
V10	Audio Output	25L6GT	25L6GT	TAC	12L6GT used as an alternate.
V11	Vert. Osc. - Vert. Output	12BH7	12BH7	9A	
V12	Horiz. AFC - Horiz. Osc.	6SN7GTA	6SN7GTA	8BD	6SN7GT may be used as an alternate.
V13	Horiz. Output	6CU5	6CU5	8AM	
V14	Damper	5AX4GT	5AX4GT	4CG	
V15	HV Rect.	1X2B	1X2B	8Y	
				12L	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	CBS PART No.	GENERAL ELCTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V16	21ALP4A	21ALP4A ① 21ALP4 21ALP4B ①	21ALP4 ① 21ALP4	21ALP4A ① 21ALP4 21ALP4 ① A/B ② 21ALP4B ②	21ALP4A ① 21ALP4 21ALP4B ① 21ALP4	12L 12L 12L 12L	① Aluminized ② Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	150	45B265	PSR150V200	BSRD101015	WS343	TD-200-300	S-110	TVL-1431
C2A	140	300	45B263			WQ606	CDB-1006	CDS-1006 MT-4540	
B	200	150							
C	5	300							
D	20	150							
C3A	200	150	45B260			BO76	WD345	TDL-305	D-088	TVL-3444
B	20	150							
C4	20	450	45B261	PSR450V20	BR2045	TC75	TD-20-450	FM-4520	TVA-1709

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	470	500	47X3UB471M	1468-0047	DS-471	5WS747	GP2K-471	MC345	1FM-347	
C6	470	500	47X3UB471M	1468-0047	DS-471	5WS747	GP2K-471	MC345	1FM-347	
C7	170									
C8	170									
C9	1000			EF-001	MFT-1000					
C10	1000			EF-001	MFT-1000					
C11	2.5									
C12	1.1			NPO-511	TC2-1	TZ03	NPOA-010			5TCCB-V1
C13	1000			BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C14	470	500	47X3UB471M	1468-0047	DS-471	5WS747	GP2K-471	MC345	1FM-347	
C15	470	500	47X3UB471M	1468-0047	DS-471	5WS747	GP2K-471	MC345	1FM-347	
C16	150			BPD-0003	DD-151	G021	GP1K-151	UC-5415	5CA-Q15	
C17	5-10									
C18	5-10									
C19	15									
C20	18				TC2-18	Z023	NPOK-180			
C21	15			NPO-4S15	DD-150	G021	GP1K-150	UC-5415	5CA-Q15	
C22	8.8			NPO-4S8.8	TC2-8R8	TP07	NPOA-8R8		ZT-5568	5TCCB-V68
C23	1000			BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C24	8.8			NPO-4S8.8	TC2-8R8	Z013	NPOA-8R8		ZT-5568	5TCCB-V68
C25	4									
C26	1000			EF-001	MFT-1000					
C27	2.7									
C28	1000			BPD-001	DD-103	KD69	801-001	DC-521	5SK-D1	
C29	1000			EF-001	MFT-1000					
C30	1000			BPD-001	DD-103	KD69	801-001	DC-521	5SK-D1	
C31	1000			EF-001	MFT-1000					
C32	3									
C33	.56									
C34	.91									
C35	15			BPD-000015	DD-150	G021	GP1K-150	UC-5415	5CA-Q15	
C36	1.2									
C37	10									
C38	10									
C39	1.5									
C40	1000			BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C41	1000			BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C42	5									
C43	75			NPO-0075		Z099				5TCC-Q75
C44	1000			BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C45	1000			EF-001	MFT-1000					
C46	1000			EF-001	MFT-1000					
C47	1000			EF-001	MFT-1000					
C48	.05	200	46A0503J	BPD-05	DF-503	CUB2S5		PT4J5	3TM-S5	
C49	5000		47A1S5	BPD-005	DD-502	KD80	811-005	DC-525	5SK-D5	
C50	1000		47A230	BPD-001	DD-103	KD69	801-001	DC-521	5SK-D1	
C51	75		47CA230A75J	NPO-4S75	TC2-34	TP15	NPOJ-240	ZT-5425	5TCC-Q25	
C52	5000		47A1S5	BPD-005	DD-502	KD80	811-005	DC-525	5SK-D5	
C53	1000		47A230	BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C54	1000		47A230	BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C55	39			NPO-4S39	TC2-38	TZ30	NPOJ-390	MCE233	5TCC-Q39	
C56	24		47CA30A24G	NPO-4S25	TC2-34	TZ15	NPOJ-240	ZT-5425	5TCC-Q25	
C57	1000		47A230	BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C58	1000		47A230	BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C59	1000		47A1S5	BPD-005	DD-502	KD80	811-005	DC-525	5SK-D5	
C60	1000		47A230	BPD-001	DD-102	KD69	801-001	DC-521	5SK-D1	
C61	10		47CA10D0J	BPD-0D001	DD-100	TP09	GP1K-100	UC-5413	5CA-Q1	
C62	6.7		47A1S6-A	NPO-4S6.7	TC2-6R7	TZ07	NPOA-6R7	ZT-5547	5TCCB-V47	
C63	.25	100	46A343	PSR5N-25		CUB2P25		PT4G25	2TM-P25	
C64	.1	100	46A343	PSR5N-1	DF-104	CUB1P1		PT4G1	2TM-P1	
C65	33		47A476	N080-4S33						

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C66	68		47A479							
C67	4.7		47A180-6		NPO-6K4.7	TC2-4R7	TZ07	NPOA-4R7	ZT-5547	5TCCB-V47
C68	.1	400	46A1042		P463N-1	DF-104	CUB4P1		PT4N1	4TM-P1
C69	5000		47A1S5		BPD-005	DD-502	K060	811-005	DC-525	5SK-D5
C70	33		47A478		N080-4S33					
C71	5000		47A1S5		BPD-005	DD-502	K060	811-005	DC-525	5SK-D5
C72	.01	200	46A1003J		BPD-01	D6-103	CUB4S1	GP3-333-103	PT4U1	2TM-S1
C73	15		47A480							
C74	5000		47A1S5		BPD-001	DD-102	K069	801-001	DC-531	5SK-D1
C75	.05	200	46A1203J		BPD-03	DF-303	CUB2S2	817-02	PT4J2	2TM-S2
C76	.02	600	46A2303J		BPD-03	DF-303	CUB4S2	817-02	PT4U2	4TM-S2
C77A	270				DI-S70		TP41	GP2K-371	UC-5337	5CA-T37
B	10000		46A4046		BPD-01	7PC-363	K063	811-01	DC-531	5SK-S1
C	10				DI-S10		TP25	GP1K-350	UC-5435	5CA-Q35
C78	.05	200	46A1203J		BPD-03	DF-303	CUB2S5		PT4J5	2TM-S5
C79	33		47CA30A330M		N033	DS-330	CUB2S3	GP1K-330	UC-5433	5CA-Q33
C80A	4700		46A1046		BPD-0047	4PC-306	K079	811-0047	DC-525	5SK-D47
B	4700				BPD-0047		K079	811-0047	DC-525	5SK-D47
C81	.01	400	46BR103E4		BPD-01	D6-103	CUB4S1	GP3-333-103	PT4U1	4TM-S1
C82	470		47CA2047LK		S470	D6-471	TP46	GP2K-471	UC-5347	5CA-T47
C83	.047	400	46BR473L4							
C84	5000		47A1S5		BPD-005	DD-502	K060	811-005	DC-525	5SK-D5
C85	20		47CA20200K		S200	D6-200	TZ13	GP1K-200	UC-542	5CA-Q2
C86	.05	400	46A1203J		BPD-05	DF-503	CUB4S5		PT4J5	4TM-S5
C87	.02	200	46A1203J		BPD-03	DF-303	CUB2S2	817-02	PT4J2	2TM-S2
C88	.25	100	46A343		P25N-25		CUB2P25		PT4G25	2TM-P25
C89	33		47A476		N080-4S33					
C90	330	500	47X3UB331K		NPO-4S330	D6-331	2ER5T22	811-221	MCB240	5TCC-T22
C91	.01	400	46C344		BPD-01	D6-103	CUB4S1	GP3-333-103	PT4U1	4TM-S1
C92	1500	500	47X3UB152K		1464-0053		1R5D13			MH-213
C93	1000		47A1S3		BPD-001	DD-103	K069	801-001	DC-521	5SK-D1
C94	.02	400	46A1203J		BPD-03	DF-303	CUB4S5		PT4J5	4TM-S5
C95	10000		47A234		BPD-01	DD-103	K063	811-01	DC-511	5SK-S1
C96	68	3000	47B473		HVD-30-68	DD30-680	V3Q68	2EV-680	DC30468	30GA-Q68
C97	.08	200	46A1083J							
C98	68	3000			HVD-30-68	DD30-680	V3Q68	2EV-680	DC30468	30GA-Q68
C99	5000	1000	47A485		HVD-10-4700		VD47			10HK-D47

† Items C77A, C77B, C77C, R65A and R65B are combined in one unit.
* Items C80A, C80B, R71A and R71B are combined in one unit.

CONTROLS

ITEM No.	RATING: RESIST ANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	CENTRALAB PART No.	ALLEN-STAR PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.25Meg		25B1097	B-69 *	A47-1Meg-S*	Q11-136 *	TA16L *	Vertical Hold, Stop at 350KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
R1A	1.25Meg		25B1178	B-69 †	A47-1Meg-S †	Q11-137 †	TA16L †	Vertical Hold, Stop at 250KΩ
								See Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A.
R2A	145KΩ	1	25B1100	B-35 *	A47-75K-S *	Q11-125 *	U-43 *	Horizontal Hold, Stop at 75KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A.
R2A	2.25KΩ	1	25B1027	A-50-2	A47-500K-2	Q13-105	TA35A	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A.
C	Switch		Not Req.	Not Req.	SW2-12	Not Req.	Not Req.	Attach to R3A.
R4A	1500Ω	1	25B1027	A-5-15		Q17-109	U-5	Contrast
B	Shaft		Not Req.	AS-3		Not Req.	Not Req.	Attach to R4A.
R5A	5Meg		25B1098			Q17-141	TA29SB	Brightness
B	Shaft		Not Req.			TQ	Not Req.	Attach to R5A.
R7A	5Meg	2	25B1099	AB-5	A47-750-S	Q11-105	TA29TL	Vertical Linearity
B	Shaft		Not Req.	AK-19	RN-3	TQ	Not Req.	Attach to R8A.
R7A	5Meg	2	25B1098	AB-26 ‡	A47-4Meg-S ‡	Q11-141 ‡	TA29SL ‡	Height Stop at 4Meg
B	Shaft		Not Req.	AK-19	RN-3	TQ	Not Req.	Attach to R7A.
R8	900Ω	2	25A1025		39-500			Buzz (Wire Wound)

Note L. This control used as an alternate in some versions.
* Connect a 330KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control (viewed from shaft end, terminals down).
† Connect a 270KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control (viewed from shaft end, terminals down).
‡ Connect a 68KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (viewed from shaft end, terminals down).
◆ Connect a 1Meg resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (viewed from shaft end, terminals down).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R9	470KΩ	1	23X2OX474K	BTS-470K	
R10	470KΩ		23X2OX474K	BTS-470K	
R11	10KΩ				
R12	1000Ω			BTS-1000	
R13	270Ω			BTS-270	
R14	470KΩ		23X2OX474K	BTS-470K	
R15	470KΩ		23X2OX474K	BTS-470K	
R16	56Ω			BTS-56	
R17	100KΩ			BTS-100K	
R19	750KΩ	0%		BTS-750K 0%	
R19	1Meg	0%		BTS-1Meg 0%	
R20	470Ω			BTS-470	
R21	15KΩ		23X2OX474K	BTS-470K	
R22	2200Ω				
R23	6800Ω				
R24	10KΩ				
R25	10KΩ			BTS-10K	
R26	470KΩ			BTS-470K	
R27	1000Ω			BTS-1000	
R28	10KΩ				
R29	2200Ω			BTA-2300	
R30	150KΩ			BTS-150K	
R31	100Ω			BTS-100	
R32	100KΩ		23X1OX102K	BTS-1000	
R33	1000Ω		23X2OX102K	BTS-1000	
R34	270KΩ		23X2OX274K		
R35	470KΩ		23X2OX472K	BTS-470K	
R36	1000Ω		23X3OX102K	BTS-1000	
R37	47Ω		23X3OX470K	BTS-47	
R38	220Ω		23X3OX221K	BTS-220	
R39	18KΩ		23X3OX183K		
R40	1000Ω		23X3OX102K	BTS-1000	
R41	100Ω		23X3OX102K	BTS-1000	
R42	47Ω		23X3OX470K	BTS-47	
R43	13KΩ		23X3OX123K		

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R44	1000Ω	1	23X3OX102K	BTS-1000	
R45	1000Ω		23X3OX102K	BTS-1000	
R46	180Ω		23X3OX181K	BTS-180	
R47	1Meg		23X3OX105K	BTS-1Meg	
R48	560Ω		23X3OX562K	BTS-560Ω	
R49	1Meg		23X3OX105K	BTS-1Meg	
R50	47Ω	1	23X3OX473K	BTA-47K	
R51	330Ω		23X3OX331K	BTA-34K	
R52	10KΩ	2	23X4OX103K	BTS-10K	
R53	18KΩ	1	23X3OX183K	BTA-18K	
R54	390KΩ	1	23X3OX394K	BTS-390K	
R55	820KΩ		23X3OX824K	BTS-820K	
R56	100KΩ		23X3OX104K	BTS-100K	
R57	18KΩ		23X3OX183K	BTS-18K	
R58	150Ω		23X3OX151K	BTS-150	
R59	470Ω		23X3OX471K	BTS-470	
R60	5600Ω	1	23X3OX562K	BTA-5600	
R61	560KΩ	5%	23X3OX564J	BTS-560 5%	
R62	820Ω		23X3OX822K	BTS-820	
R63	470KΩ	5%	23X3OX474J	BTS-470K	
R64	10KΩ		23X3OX103K	BTS-10K	
R65A	220KΩ		† 49A046	BTS-220K	
B	2.2Meg			BTS-2.2Meg	
R66	820KΩ	1	23X3OX824K	BTS-820K	
R67	680KΩ	1	23X3OX684K	BTS-680K	
R68	22KΩ	1	23X3OX223K	BTS-22K	
R69	6800Ω	1	23X3OX682K	BTA-6800	
R70	470Ω	1	23X3OX472K	BTS-470	
R71A	22KΩ	1	† 49A044	BTS-22K	
B	10KΩ			BTS-10K	
R72	680KΩ	1	23X3OX684K	BTA-680K	
R73	15KΩ	2	23X4OX153K	BTS-15K	
R74	68KΩ	2	23X3OX683K	BTS-68K	
R75	15KΩ	2	23X4OX153K	BTS-15K	
R76	56Ω	2			

† Items R65A, R65B, C77A, C77B, C77C are combined in one unit.
* Items R71A, R71B, C80A, C80B are combined in one unit.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	117VAC	6.3VAC @1.55A tap @ 2VAC @ 2.2A tap @ 5.3VAC @6A			53C232 53C314 ①					

① Alternate part used in some versions.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Rem PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T2	Vert. Osc. Trans.	55B256	B6704	A-3006					
T3	Horiz. Output Trans.	55D263 ①	FB41S *	HVO-37 *					
	Horiz. Output Trans.	55B266 ② ③	FB41S *	HVO-37 *					
						X123 *	A-8263 *	FLY-25 *	D-68 *
						X123 *	A-8263 *	FLY-25 *	D-68 *
T4	Vert. Output Trans.	55C260		A-2824					
T5A	Yoke (90°) Horiz. 30MH	53D325 ③	DF60T	MDF-92	215D1	Y90F19/42	DY-16A	Y-16	Y-41-1
B	Vert. 40MH		$ T B	$ T B	$ T B	$ T B	$ T B	$ T B	$ T B

① Used in chassis stamped rus1. Includes HV lead and coil L44.
② Alternate horiz. output trans.
③ Includes HV lead.
④ Includes HV rect. filament resistor.
⑤ Includes capacitor C98 & resistors R76 & R77.
⑥ Use original rear cover & centering device.
⑦ Use original horiz. damping network.
⑧ Jumper terminals # 3 & #6.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rem Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
	3 4	4	6	6	3	6	6	6
	1 7	5	3	3	7	3	3	3
	5 2	NC	5	5	2	5	5	5
	2 6	6	2	2	6	2	2	2
Special Notes	⑨ ⑩ ⑪							

⑨ For 55D253
⑩ For 55B266
⑪ For 55B270

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T6	3.2KΩ	3.5Ω	55B248	Z1106	A-3023	A-3332	24B50	S-12X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP	REPLACEMENT DATA: SILVERTONE PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4"	PM	3.5Ω	85C175	4A07	22S81	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	Fil. Choke	0Ω						
L4	Fil. Choke	0Ω						
L5	Cathode Choke	0Ω						
L6	RF Choke	0Ω						
L7	UHF IF Coil	0Ω						
L8	VHF Matching Trans.	.6Ω	.6Ω					
L9	VHF Matching Trans.	.6Ω	.6Ω					
L10	IF Trap	.3Ω						
L11	FM Trap	0Ω						
L12	IF Trap	.2Ω						
L13	UHF IF Coil	1.7Ω						
L14	VHF Ant. Coil	0Ω						
L15	VHF Ant. Coils	0Ω						Channel 13
L16	UHF IF Coil	0Ω						
L17	Fil. Choke	0Ω						
L18	Neut. Coil	0Ω						
L19	VHF RF Coil	0Ω						Channel 13
L20	VHF RF Coils	0Ω						
L21	UHF IF Coil	0Ω						

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L22	VHF Mixer Grid Coil	0Ω						Channel 13
L23	VHF Mixer Grid Coils	0Ω						
L24	RF Choke	0Ω						
L25	Fil. Choke	0Ω						
L26	VHF Osc. Coil	0Ω						Channel 13
L27	VHF Osc. Coils	0Ω						
L28	VHF Osc. Coil	0Ω						Channel 6
L29	UHF IF Coil	1.7Ω						
L30	UHF IF Coil	0Ω						
L31	Conv. Plate	.2Ω						
L32	1st Video IF	.1Ω		51A1926	17-4504 *	TV-125 ■	6234 ■	
L33	2nd Video IF	.1Ω		51A1925	17-4502 *	TV-131	6225	
L34	Fil. Choke	0Ω		53A282	19-3001		6175	.4 Microhenries
L35	3rd Video IF	.1Ω		51A1927	17-4500	TV-132	6221 ▲	Includes 41.25MC Trap
L36	4th Video IF	.2Ω	.2Ω	50A654	17-5004 ▬	TV-125 ▬	6234 ▬	
L37	Series Peaking Coil	4.8Ω		53A307	19-1006		4624	16 Microhenries
L38A	4.5MC Trap	3.1Ω		51A1858				
B	1st Sound IF	1Ω						
L39	Shunt Peaking Coil	17Ω		51C1875	19-4950 ♦		4652 ♦	975 Microhenries; Wound on 15KΩ resistor
L40	Series Peaking Coil	12Ω		51C1876	19-3500 †		6174 †	465 Microhenries; Wound on 68KΩ resistor
L41	2nd Sound IF	1.9Ω	3.7Ω	51A1859				
L42	Quadrature Coil	5.5Ω		51A1857	20-1005	TV-151	1480	
L44	RF Choke	4Ω			19-1006		4624	16 Microhenries

* Detune trap.
■ Cut out chassis hole, use one winding and use adaptor plate.
▲ Use one winding only.
▬ Use adaptor plate.
♦ Parallel with 15KΩ resistor.
† Parallel with 68KΩ resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L43	17Ω	37Ω	50C648	20-1402 #	TV-162 #	6183 #	205R1 #	H-100 #	HS-3 #	Waveform winding 36Ω

\# Reverse coil mounting in can.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L45	.220ADC	53Ω	.85 HY	56B187	C5040	C2994	C2327	26C41	C-21X ①

① Drill one new mounting hole.

SELENIUM RECTIFIER

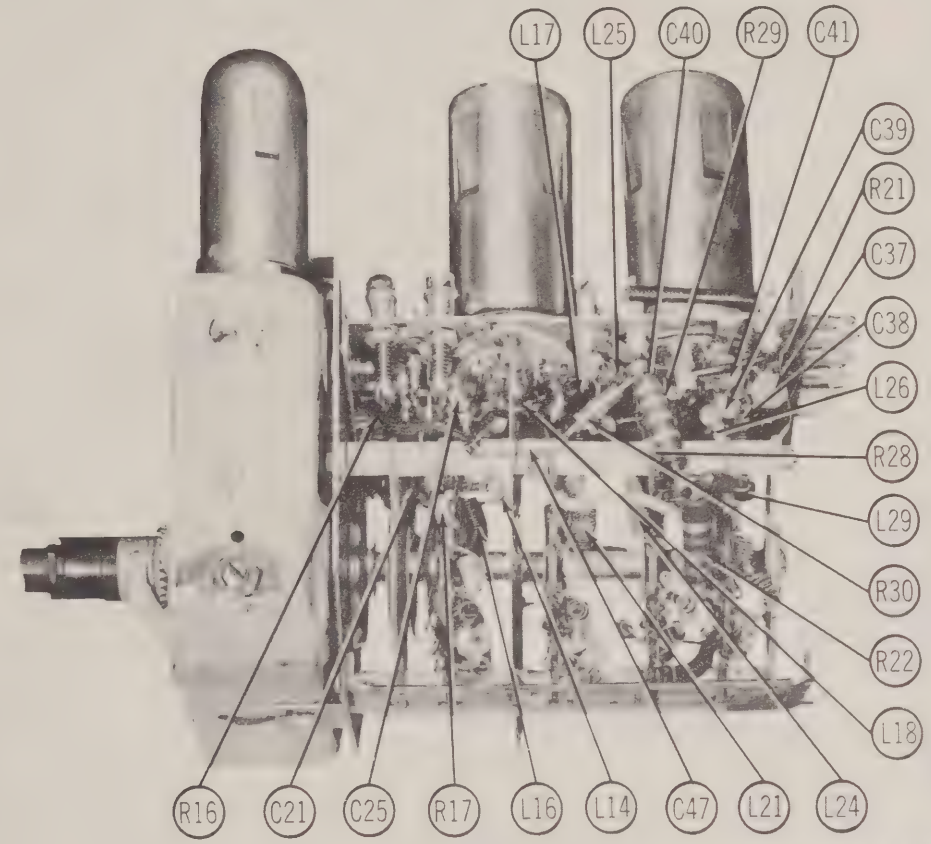
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.220ADC	27A173-B	1090A	MR300	6S300	6Q4	300	
M2	.220ADC	27A173-B	1090A	MR300	6S300	6Q4	300	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SILVERTONE PART No.	SYLVANIA PART No.	
M3	ST-47	121A433	1N82 or 1N82A	UHF Mixer (Clip in)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Dial Light	39A004	#47
M5	Tuner	1D2170	VHF-UHF combination
M6	Centering Device		Part of deflection yoke (T7) rear cover
M7	Ion Trap	21B189	
B3	Trimmer Cap.	44A448	Horiz. Lock (10-160MMF)
	Cabinet	78A1129	Walnut
	Cabinet	78A1139	Mahogany
	Knob	15A824	Channel Selector
	Knob	15A834	Control (4 used)
	Knob	15A826	VHF fine tuning
	Knob	15B828	UHF tuning
	Knob Insert	15C830	UHF calibrated
	Safety Glass	22A424	
	Mask	7E575	Walnut
	Mask	7A584	Mahogany



RF TUNER-RIGHT SIDE

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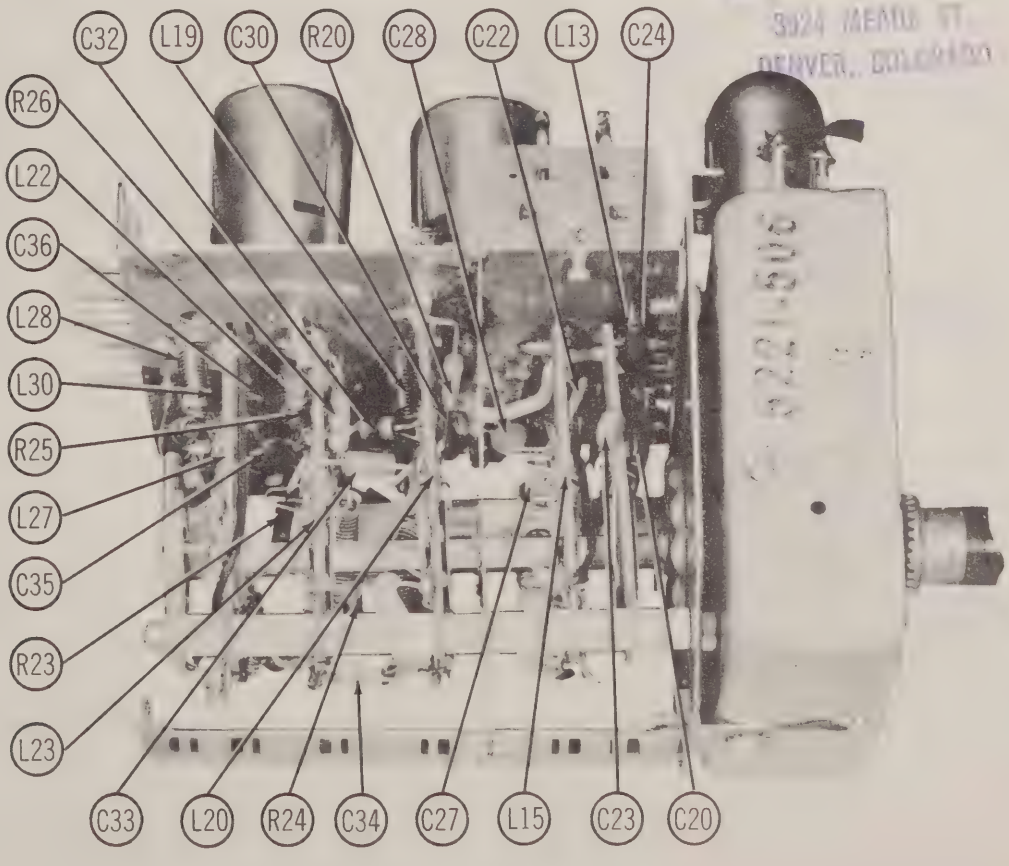
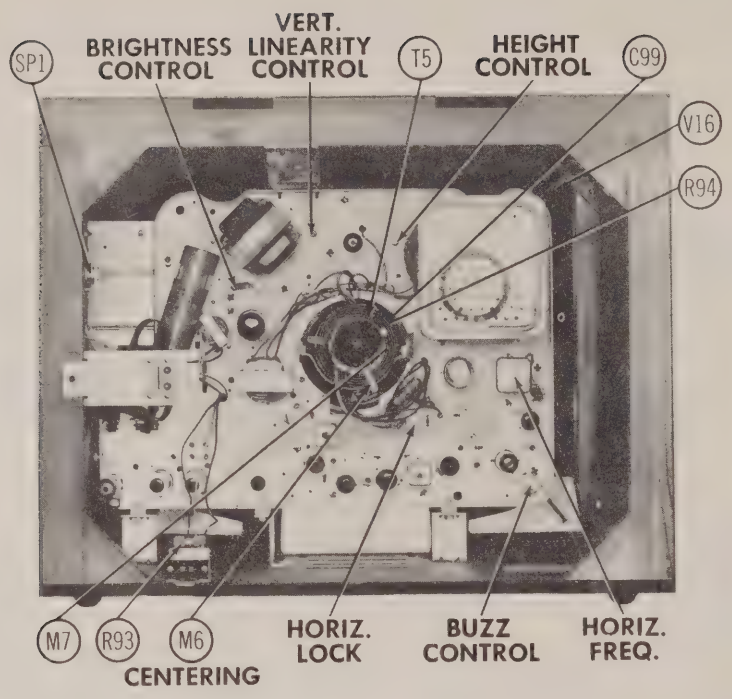


RF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Preset the horizontal lock trimmer B3 one-half turn from maximum clockwise position.
2. Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.
3. Connect the vertical amplifier of the oscilloscope thru a 10MMF capacitor to lug "4" of L43. Low side to chassis. Adjust the horizontal waveform slug (B2) until waveform similar to Fig. 5 is obtained. While making this adjustment keep the picture in sync with the horizontal hold and if necessary, B1 and B3.
4. Remove scope connections from lug "4" of L43.
5. Turn the horizontal hold control fully clockwise. Turn B1 counter-clockwise until the picture just loses sync, then turn B1 clockwise until the picture is just ready to pull-in sync. Momentarily remove signal by switching off channel and back again. Turn the horizontal hold control clockwise slowly until picture just falls into sync. If more than 3 bars are present just before the picture falls in sync, adjust the horizontal lock trimmer (B3) slightly clockwise. If less than 3 bars are present, adjust B3 slightly counter clockwise. Repeat steps 4 and 5 until the pull-in range of the horizontal hold control is from 60 to 120 degrees.
6. In weak signal areas, adjust the horizontal hold control so that when switching off channel and back again, the picture returns completely in sync.

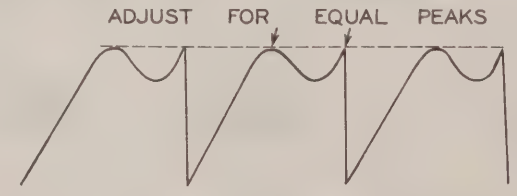
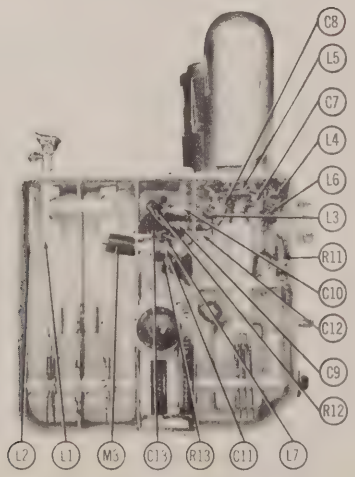


FIG. 5



UHF TUNER FRONT VIEW

PHOTOFACT* Folder

STROMBERG-CARLSON MODELS K-21 Series, KH-21 Series, K-22 Series, KH-22 Series

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STROMBERG-CARLSON MODEL K-22TM

TRADE NAME	Stromberg-Carlson	MODELS	SERIES
		K-21CB, K-21CM, K21HB, K21HCB, K-21HCM, K-21HCW, K-21HM, K-21HW, K-21TB, K-21TM, K-21TQ	K-21
		KH-21CB, KH-21CM, KH-21HB, KH-21HCB, KH-21HCM, KH-21HCW, KH-21HM, KH-21HW, KH-21TB, KH-21TM, KH-21TQ	KH-21
		K-22CB, K-22CM, K-22HB, K-22HCB, K-22HCM, K-22HCW, K-22HM, K-22HW, K-22TB, K-22TM, K-22TQ	K-22
		KH-22CB, KH-22CM, KH-22HB, KH-22HCB, KH-22HCM, KH-22HCW, KH-22HM, KH-22HW, KH-22TB, KH-22TM, KH-22TQ	KH-22
MANUFACTURER	Stromberg-Carlson Co. -Service Dept., 1700 University Ave., Rochester 10, N.Y.		
TYPE SET	Television Receiver		
TUBES	Twenty-one		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.48 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing (UHF) 17
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 17
Parts List and Descriptions ..... 11 thru 14
Photographs
- Cabinet-Rear View 17
- Capacitor Identification 3, 10
- Chassis - Top View 16
- RF Tuner 15

Photographs (Cont)
- Resistor Identification 4, 9
- Trans., Inductor & Alignment Identification 16

Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Tuner) 14
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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DATE 3-56 SET 308 FOLDER 13

STROMBERG-CARLSON MODELS K-21 Series, KH-21 Series, K-22 Series, KH-22 Series

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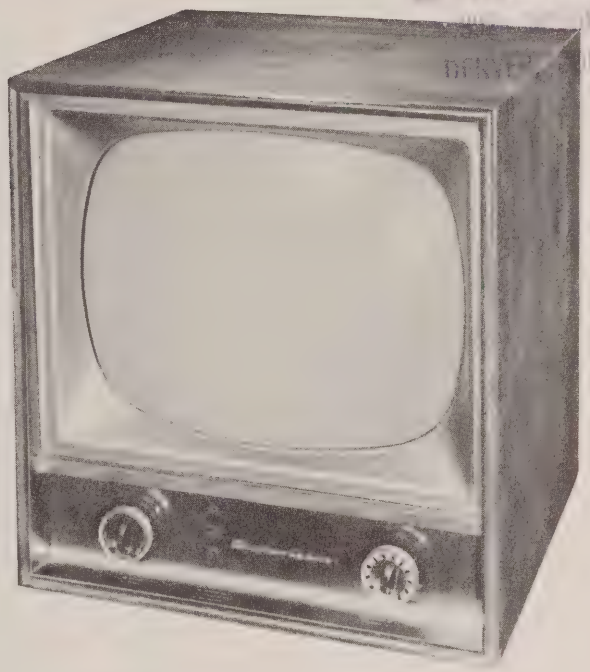

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs and UHF dial from front panel of cabinet.

2. Disconnect antenna leads.

3. Remove 6 wood screws and 1 metal screw. Remove rear cover.

4. Remove 4 chassis bolts.Remove chassis.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet above and slightly to the left of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove 4 wood screws holding wood strip at the top edge of the safety glass. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See Tube Placement Chart on Page 5.

SPECIAL ADJUSTMENTS

A. AGC Control Adjustment

All necessary horizontal sweep circuit adjustments should be made before adjusting the AGC control (R8).

Tune in the strongest TV signal . Starting with R8 in its extreme counter clockwise position, turn R8 clockwise until the picture starts to distort or lose sync, then counter clockwise until the picture is stable.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit may be made from the rear panel of the chassis. Set the horizontal hold control at its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A12) located on top of chassis.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

STROMBERG-CARLSON MODELS K-21 Series, KH-21 Series, K-22 Series, KH-22 Series

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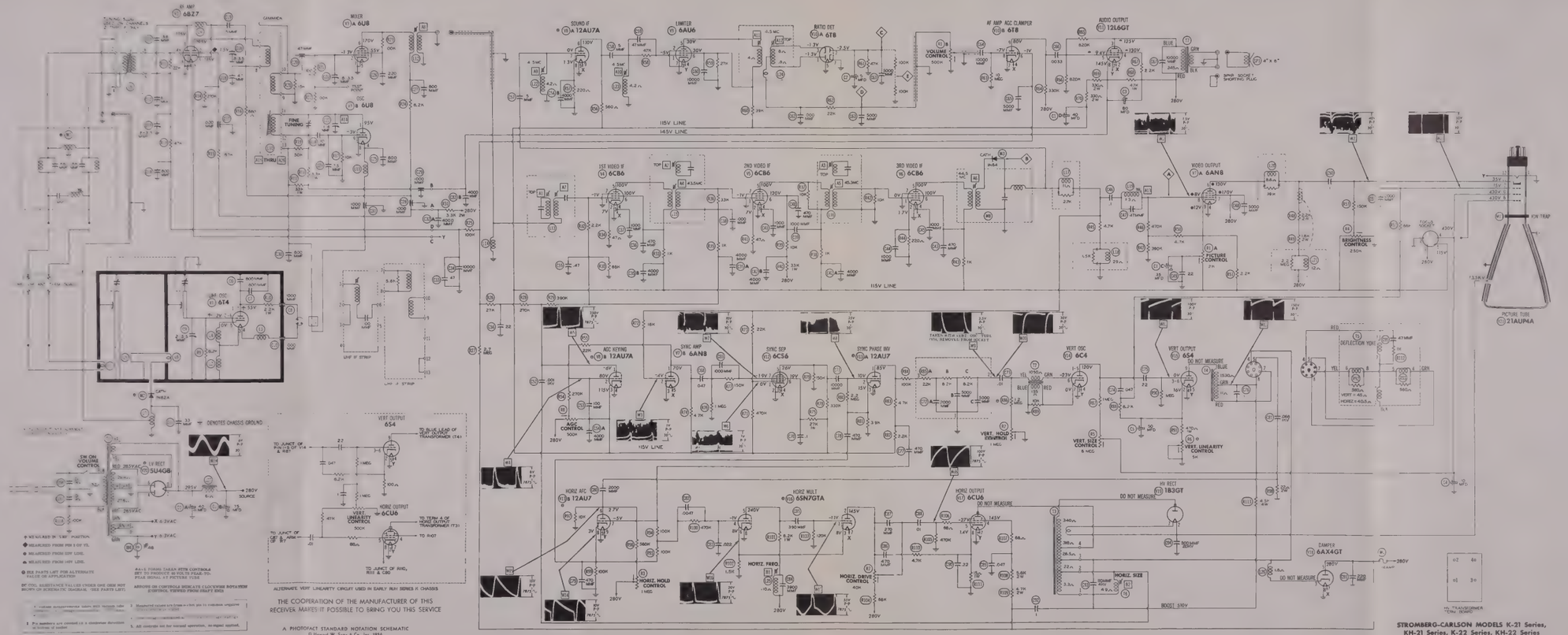

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STROMBERG-CARLSON MODELS K-21 Series, KH-21 Series, K-22 Series, KH-22 Series

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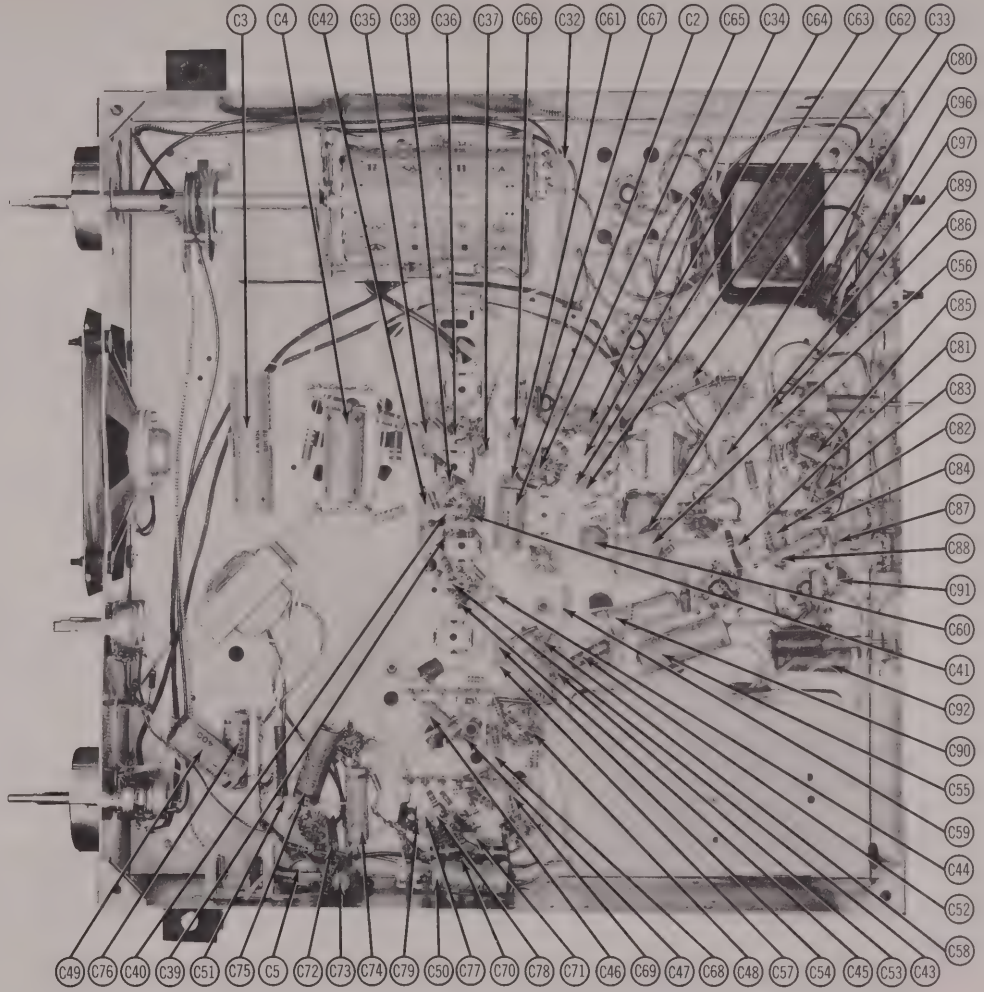
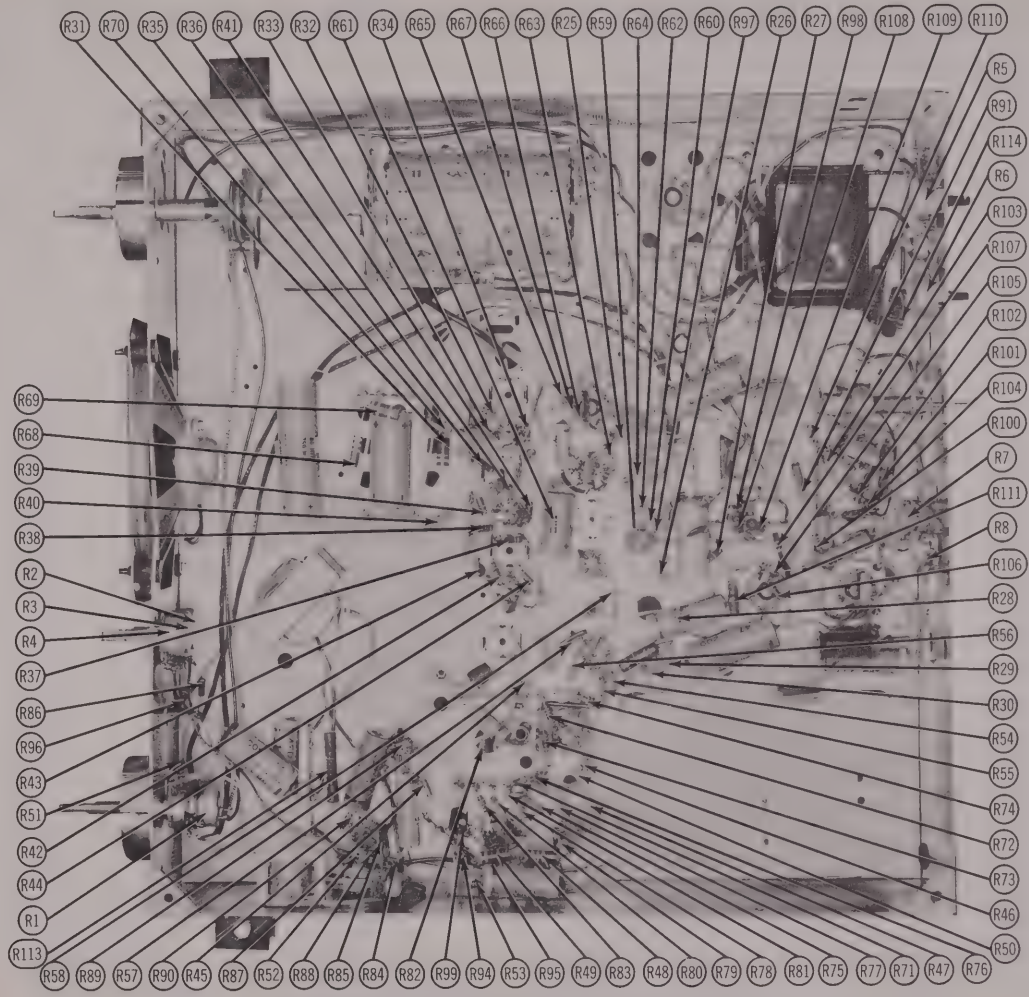


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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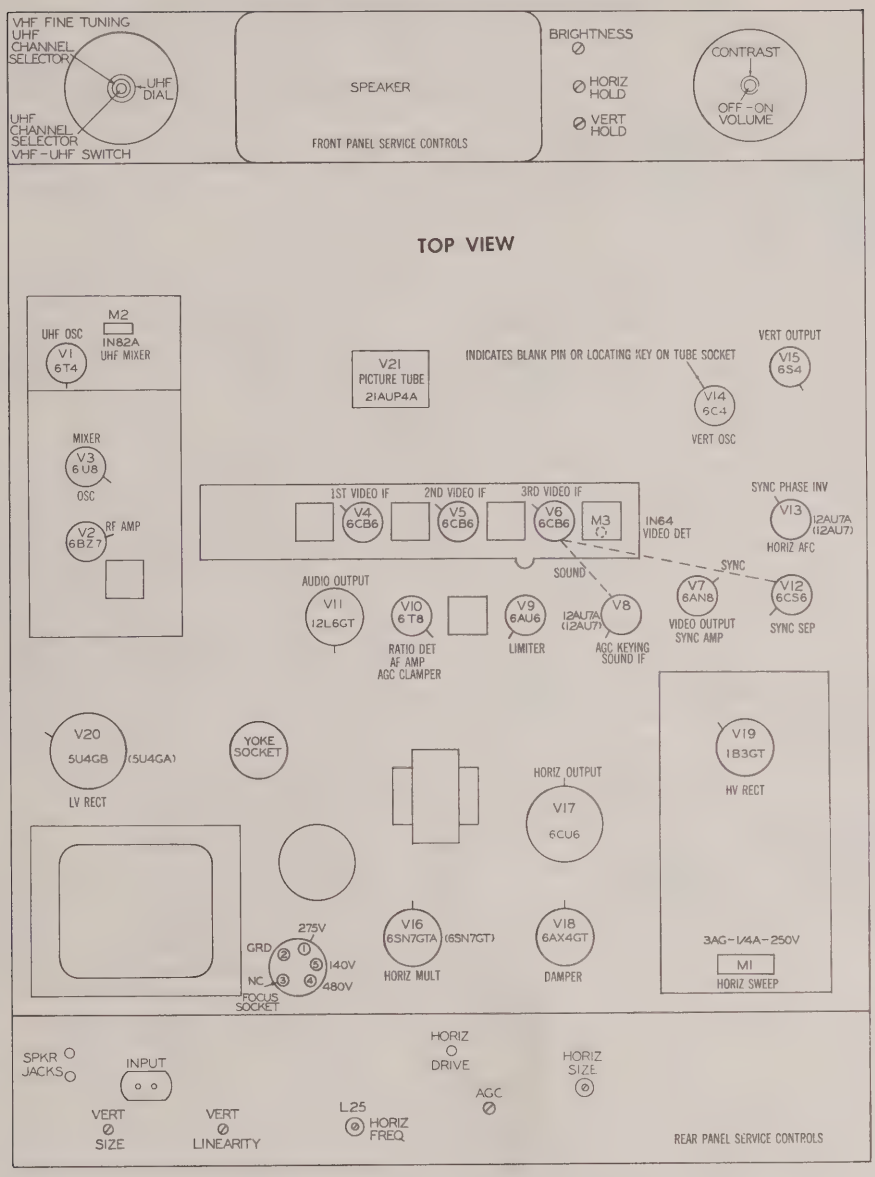
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V11 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V8, V21**
Has pic, no sound - **V8, V9, V10, V11**
Overloaded picture - **V8, V10**

SYNC FAILURE
No vert. sync - **V13, V14**
No horiz. sync - **V13, V16**
No vert. or horiz. sync - **V7, V12, V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V21, Fuse (M1)**
No vertical deflection - **V14, V15**
Poor vert. linearity or foldover - **V14, V15**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20**
Vert. off freq. - **V13, V14**
Horiz. off freq. - **V13, V16**

PROPERTY OF
L. F. BLANKENSH
3924 MEADE ST.
DENVER, COLORAD

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

In the event the picture tube is removed during alignment, the high voltage lead should be securely taped and kept away from chassis. Do not remove the horizontal multivibrator tube (V16) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to the ungrounded side of C55. Connect the positive lead to chassis. Attenuate the sweep generator output to maintain 2 volts peak to peak on scope. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over Osc. Mixer Tube (V3). Low side to chassis.	Not used	39.75MC (400∿ Mod.)	Between any two VHF channels	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A1	Adjust for MINIMUM 400∿ indication ion on scope.
2.	"	"	"	41.25MC (400∿ Mod.)	"	"	A2	"
3.	"	"	"	47.25MC	"	"	A3	"
4.	100MMF	High side to pin 1 (grid) of 1st Video IF Amplifier Tube (V4). Low side to chassis.	"	43.5MC (Unmod.)	"	Use VTVM DC probe thru 47KΩ to point (A). Low side to chassis.	A4	Attenuate generator output to maintain not more than 1.5 volts on VTVM. Adjust for maximum deflection.
5.	"	"	"	45.3MC	"	"	A5	"
6.	"	"	"	44.5MC	"	"	A6	"
7.	"	"	44MC (10MC Swp.)	41.25MC 42.75MC 45.75MC 47.25MC	"	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary, adjust A4, A5 and A6 for desired response. A4 affects low frequency side. A5 affects the high frequency side. A6 affects the top portion of the response curve. Increase sweep generator output and check position of 41.25MC and 47.25MC marker positions as in Fig. 1. If necessary retouch A2 and A3 to place 41.25MC and 47.25MC trap markers in position.
8.	Direct	High side to an ungrounded tube shield floating over Osc. Mixer Tube (V3). Low side to chassis.	44MC (10MC Swp.)	39.75MC 42.75MC 45.75MC	Between any two VHF channels	Vert. amp. thru 47KΩ to point (A). Low side to chassis.	A7, A8	Adjust A7 and A8 for response curve similar to Fig. 2. Increase sweep generator output and check position of 39.75MC trap marker. If necessary slightly retouch A1 for correct 39.75MC marker position.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (+1%) resistors in series from point (C), to chassis. The junction of these two resistors is alignment point (E) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point (B). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A9, A10, A11	Attenuate generator output to maintain 1.5 volts at VTVM. Adjust A9, A10 and A11 for maximum deflection.
10.	"	"	"	"	DC probe to point (D). Common to point (E).	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

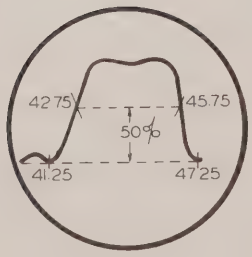


FIG. 1

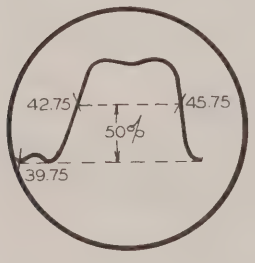


FIG. 2

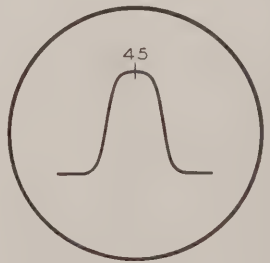


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to point Ⓑ. Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any non-interfering channel	Vert. Amp. to point Ⓒ. Low side to chassis.	A9, A10, A11	Disconnect stabilizing capacitor (C2). Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
10.	"	"	"	"	"	Vert. Amp. to point Ⓓ. Low side to chassis.	A12	Reconnect C2. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast control for maximum.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD	High side to point Ⓑ. Low side to chassis.	Not used	4.5MC (400∿ Mod.)	Any non-interfering channel	Vert. Amp. thru detector (Fig. 5) to pin 11 (cathode) of picture tube. Low side to chassis.	A13	Adjust for MINIMUM 400∿ indication on scope.

VHF OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using adjustment A14.
NOTE: Adjust A14 not in tuner #164044). It should be noted that this (A14) is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A14 will not bring all channels well within the range of the fine tuning control it wil be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel oscillator adjustment screws are reached through a hole just above and slightly to the left of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel. Leave bias connected as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp.)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point Ⓐ. Low side to chassis.	A15	Adjust to place sound marker in trap notch as in Fig. 6. Video marker should be at 50%.
			207MC (10MC Swp.)	205.25MC 209.75MC	12		A16	
			201MC (10MC Swp.)	199.25MC 203.75MC	11		A17	
			195MC (10MC Swp.)	193.25MC 197.75MC	10		A18	
			189MC (10MC Swp.)	187.25MC 191.75MC	9		A19	
			183MC (10MC Swp.)	181.25MC 185.75MC	8		A20	
			177MC (10MC Swp.)	175.25MC 179.75MC	7		A21	
			85MC (10MC Swp.)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp.)	77.25MC 81.75MC	5		A23	
			69MC (10MC Swp.)	67.25MC 71.75MC	4		A24	
			63MC (10MC Swp.)	61.25MC 65.75MC	3		A25	
			57MC (10MC Swp.)	55.25MC 59.75MC	2		A26	

VHF RF AND MIXER ALIGNMENT

The VHF RF and Mixer tuner portion of this receiver have been properly aligned at the factory and are very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

The UHF Tuner portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion is not recommended in the field.

PROPERTY OF
U. S. NAVY RECRUITING
1845 WAZEE ST.
DENVER, COLORADO

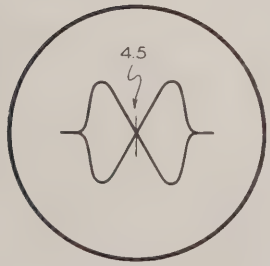


FIG. 4

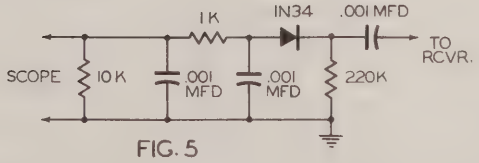


FIG. 5

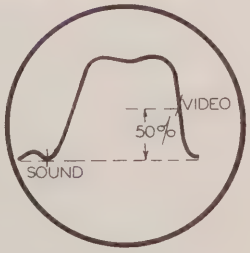
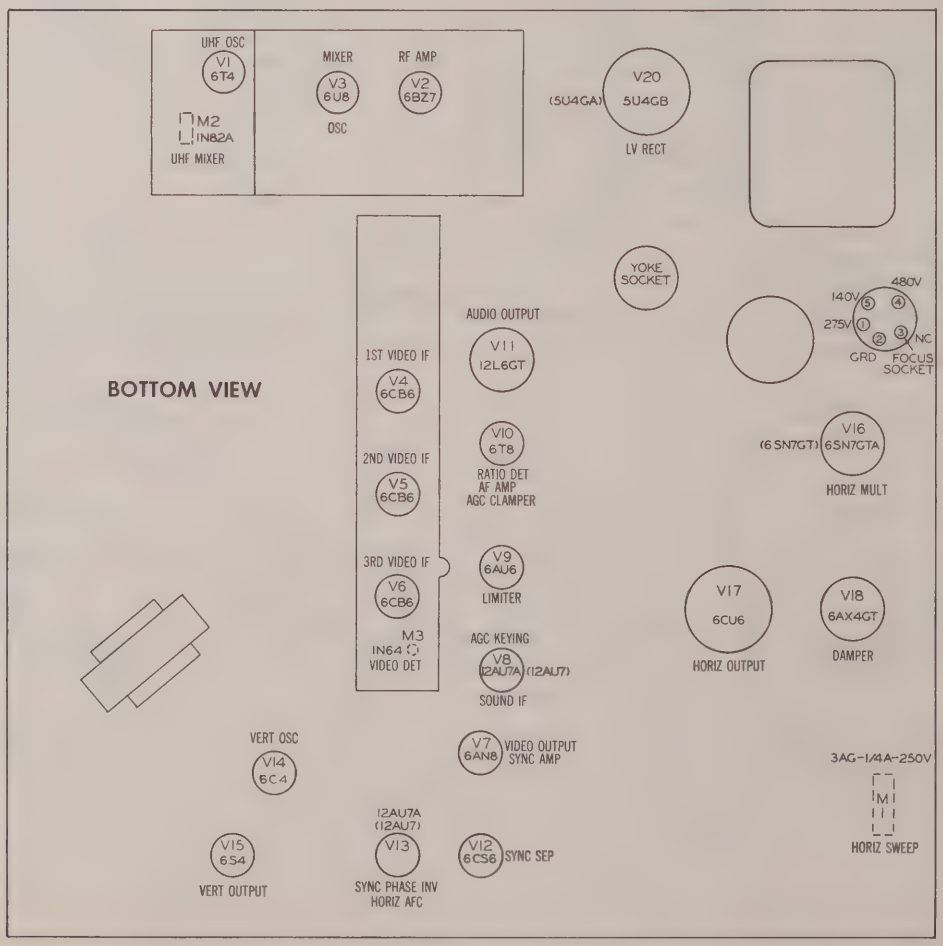


FIG. 6

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6T4	*■ 5. 5KΩ	8. 2KΩ	0Ω	. 1Ω	0Ω	8. 2KΩ	*■ 5. 5KΩ		
V 2	6BZ7	† 4KΩ	120KΩ	INF	0Ω	. 1Ω	INF	750KΩ	0Ω	0Ω
V 3	6U8	■ 3. 3KΩ	200KΩ	† 110KΩ	. 1Ω	0Ω	† 12KΩ	0Ω	0Ω	10KΩ
V 4	6CB6	70KΩ	47Ω	0Ω	. 1Ω	▲ 1KΩ	▲ 1KΩ	0Ω		
V 5	6CB6	70KΩ	47Ω	0Ω	. 1Ω	▲ 1KΩ	† 45KΩ	0Ω		
V 6	6CB6	. 2Ω	220Ω	0Ω	. 1Ω	▲ 1KΩ	▲ 1KΩ	0Ω		
V 7	6AN8	▲ 4. 7KΩ	23KΩ	0Ω	0Ω	. 1Ω	† 4KΩ	† 61Ω	600KΩ	▲ 2KΩ
V 8	12AU7A	400KΩ	▲ 27KΩ	▲ 0Ω	0Ω	0Ω	▲ 560Ω	4. 2Ω	220Ω	. 1Ω
V 9	6AU6	47KΩ	0Ω	0Ω	. 1Ω	▲ 27KΩ	▲ 27KΩ	0Ω		
V 10	6T8	500KΩ	47KΩ	500KΩ	. 1Ω	0Ω	600KΩ	0Ω	10Meg	† 330KΩ
V 11	12L6GT	NC	. 1Ω	† 305Ω	† 2. 2KΩ	450KΩ	TP	. 1Ω	30KΩ	
V 12	6CS6	27KΩ	0Ω	0Ω	. 1Ω	▲ 80KΩ	▲ 27KΩ	1Meg		
V 13	12AU7A	▲ 6. 9KΩ	2. 2Meg	3. 9KΩ	0Ω	0Ω	10KΩ	300KΩ	100KΩ	. 1Ω
V 14	6C4	▲ 2. 5Meg	NC	0Ω	. 1Ω	▲ 2. 5Meg	1. 5Meg	155Ω		
V 15	6S4	NC	900Ω	1Meg	0Ω	. 1Ω	1Meg	NC	NC	▲ 6KΩ
V 16	6SN7GTA	120KΩ	† 100KΩ	1. 5KΩ	700KΩ	† 8. 4KΩ	1. 5KΩ	. 1Ω	0Ω	
V 17	6CU6	NC	0Ω	TP	† 10. 5KΩ	470KΩ	NC	. 1Ω	15Ω	TOP CAP ▲ 28Ω
V 18	6AX4GT	NC	NC	300KΩ	NC	† 65Ω	TP	. 1Ω	0Ω	
V 19	1B3GT		PINS	1-8	HAVE	INF	RESISTANCE			TOP CAP ▲ 368Ω
V 20	5U4GB	NC	60KΩ	NC	28Ω	NC	29Ω	NC	60KΩ	
V 21	21AUP4A	0Ω	70KΩ	PIN 6 ▲ 4. 5KΩ	PIN 10 ▲ 4. 5KΩ	PIN 11 ▲ 180KΩ	PIN 12 . 1Ω			

* MEASURED IN "UHF" POSITION.
■ MEASURED FROM 145V LINE.
▲ MEASURED FROM 115V LINE.
† MEASURED FROM PIN 2 OF V20.
▲ MEASURED FROM PIN 3 OF V12.
NC-NO CONNECTION.
TP-TIE POINT.



TUBE PLACEMENT CHART

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	UHF Osc.	6T4	6T4	7DK	
V2	RF Amp.	6BZ7	6BZ7	9AJ	
V3	Osc. Mixer	6U8	6U8	9AE	
V4	1st Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output - Sync Amp.	6AN8	6AN8	9DA	
V8	AGC Keying Sound IF Amp.	12AU7A	12AU7A	9A	12AU7 may be used as an alternate.
V9	Limiter	6AU6	6AU6	7BK	
V10	Ratio Det. - AF Amp. - AGC Clamper	6T8	6T8	9E	
V11	Audio Output	12L6GT	12L6GT	7AC	
V12	Sync Sep.	6CS6	6CS6	7CH	
V13	Sync Phase Inv. - Horiz. AFC	12AU7A	12AU7A	9A	12AU7 may be used as an alternate.
V14	Vert. Osc.	6C4	6C4	6BG	
V15	Vert. Output	6S4	6S4	9AC	
V16	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	6SN7GT may be used as an alternate.
V17	Horiz. Output	6CU6	6CU6	6AM	
V18	Damper	6AX4GT	6AX4GT	4CG	
V19	HV Rect.	1B3GT	1B3GT	3C	
V20	LV Rect.	5U4GB	5U4GB	5T	5U4GA may be used as an alternate.

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: CBS PART No.	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V21	21AUP4A ①	21AUP4A ① 21AUP4	21AUP4A ①	21AUP4A/B ② 21AUP4	21AUP4A ① 21AUP4	12L 12L	① Aluminized ② Silver Screen

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: PYRAMID PART No.	REPLACEMENT DATA: SANGAMO PART No.	REPLACEMENT DATA: SPRAGUE PART No.
C1A	▲40	400	111131		D125	FP375.5	TM-4111	T-170	TVL-4670
B	■75	400			BR4025	TC58	TD-40-250	MTD-4540	TVA-1511
C	▲35	200							
D	40	200							
C2	5	50	111093	SRE50V5	BR550	TC30	TD-5-50	MMT-0505	TVA-1303
C3	80	250	111130	PRS450V80	BR8045	TCD2274	TD-80-350	MT-25100	TVA-1716
C4	10	500	111132	PRS500V10	BR1250	TC82	TD-10-500	MT-4710	TVA-1902
C5	50	50	111012	PRS50V50	BR505	TC39	TD-50-50	FM-0505	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C6	800				DD-801	K067	831-801	DC-521	5GA-T8	
C7	800				DD-801	K067	831-801	DC-521	5GA-T8	
C8	1000									
C9	2-5.5									
C10	1000								5TCU-Q33	
C11	33			N750-DI33	TCN-33	N029	N750K-330		5TCCB-V68	
C12	6.8			NP0-DI6.8	TCZ-6R8	Z013	NP0A-6R8	ZT-5568		
C13	.8-3.5								5GA-T8	
C14	800				DD-801	K067	831-801	DC-521		
C15	3.6									
C16	.8-3.5									
C17	1000									
C18	47			BPD-00047	DD-470		831-470	UC-5447	5GA-Q47	
C19	1.5			NP0-SII.5	TCZ-IR5	Z004	NP0A-IR5	ZT-5515	5TCCB-V15	
C20	47				MFT-50					
C21	.8-3.5									
C22	1-4				829-4		3115-01-10	CT551		
C23	7.5									
C24	10									
C25	800				DD-801	K067	831-801	DC-521	5GA-T8	
C26	220			BPD-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C27	800				DD-801	K067	831-801	DC-521	5GA-T8	
C28	1000									
C29	1000									
C30	800				DD-801	K067	831-801	DC-521	5GA-T8	
C31	1000			BPD-001						
C32A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C33	.47	200	110709	P288N-47		CUB2S47		PT4047	2TM-P47	
C34	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C35A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C36	470		110464	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C37	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C38	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C39	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C40	470		110464	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C41	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C43	470		110464	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C44	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C45	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C46	.1	200	110705	P288N-P1	DF-104	CUB2P1		PT401	2TM-P1	
C47	47			NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-Q47	
C48	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C49	.22	400	110726	P488N-P22		CUB4P22		PT4022	4TM-P22	
C50	.1	400	110724	P488N-P1	DF-104	CUB4P1		PT401	4TM-P1	
C51	2000		110840	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C52	.001	1000	110562	P1088N-001	DD-102	K069	IR5KV-102	PT1621	10TM-D1	
C53	100		110594	5110C	D6-101	TP34	GPIK-101	UC-531	5CA-T	
C54A	4000		110685	P488N-X2K004	D6-402	DET78	831-004	DCD-534	51K-D4	
B	4000				[illegible]					
C55	.47	200	110709	P388N-47		CUB2P47		PT4047	2TM-P47	
C56	.22	400	110725	P488N-23		CUB4P23		PT4023	4TM-P22	
C57	5		110598	5I5	D6-050	TP06	GPIK-050	UC-531	5CA-V5	
C58	5		110598	5I5	D6-050	TP06	GPIK-050	UC-531	5CA-V5	
C59	47		110403	5I47	D6-470	TP39	GPIK-470	UC-5447	5CA-Q47	
C60	10000		110572	BPD-01	DD-103	K081	811-01	DC-531	5HK-E1	
C61	5000		110586	BPD-005	DD-502	K060	811-005	DC-526	5HK-D5	
C62	1000		110624	BPD-001	DD-102	K069	901-001	DC-521	5HK-D1	
C63	5000		110586	BPD-005	DD-502	K060	811-005	DC-526	5HK-D5	
C64	10000		110572	BPD-01	DD-103	K082	811-01	DC-531	5HK-E1	
C65	1000		110586	BPD-005	DD-502	K060	811-005	DC-525	5HK-D5	
C66	.033	400	110715	BPD-0033	DE-333	CUB6D33	GP3-333-333	PT6333	6TM-D33	
C67	10000		110572	BPD-01	DD-103	K082	811-01	DC-531	5HK-E1	
C68	.047	400	110723	BPD-05	DF-503	CUB4P47		PT4047	4TM-P47	
C69	1000		110624	BPD-001	DD-102	K069	901-001	DC-521	5HK-D1	
C70	.1	400	110724	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C71	10000		110572	BPD-01	DD-103	K082	811-01	DC-531	5HK-E1	
C72A	2000							DC-522		
B	5000		#122200	#PA-110	#PC-100	#1B5TM1	#1405-01	DC-525	#V-1	
C	5000							DC-525		
C73	.01	600	110718	BPD-01	D6-103	CUB4D1	GP3-333-103	PT411	4TM-S1	
C74	.047	600	110741	BPD-05	DF-503	CUB6D47		PT6347	6TM-S47	
C75	.22	600	110745	P688N-22		CUB4P22		PT6022	6TM-P22	
C76	.1	600	110734	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C77	470		110464	5I470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C78	470		110464	5I470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C79	470		110464	5I470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C80	3000		110840	BPD-003	DD-303	K075	901-003	DC-532	5HK-D2	
C81	.068	1000	110572	P688N-068					10TM-S68	
C82	.0047	400	110718	BPD-0047	D6-472	CUB6D47	GP3-333-472	PT6347	6TM-D47	
C83	.022	300	110701	BPD-03	DF-203	CUB4E22	817-02	PT4122	3TM-S22	
C84	1900	500	110939	1664-0089		MC2E19		MC2845	MS-339	
C85	390	500	110362		D6-391	5H5T39	811-391	MC8243	MS-339	
C86	470	500	110363	1664-00047	D6-471	TP46	811-471	MC8245	MS-347	
C87	370	500	110363	1664-00037	D6-371	TP41	811-371	MC8241	MS-337	
C88	.01	400	110718	BPD-01	D6-103	CUB4E1	GP3-103-103	PT411	4TM-S1	
C89	.047	400	110723	BPD-05	DF-503	CUB4E47		PT4047	4TM-S47	
C90	.22	300	110707	5TM-P22		CUB2P22		PT4022	2TM-P22	
C91	220		110453	5I220	D6-221	TP39	GP2K-221	UC-5223	5CA-T22	
C92	.1	400	110734	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C93	110	4000	110848							
C94	500	30000	110830	UV-502	TV3-502	MMU30T5	413	HV30035A	30DK-T5	
C95	47			5I47	DD30-470	TP29	5HV-470	DC30447	30GA-Q47	
C96	.01	1000	110843	P1088N-01	DD-103	CUB1ED1		PT1511	10TM-S1	
C97	.01	1000	110843	P1088N-01	DD-103	CUB1ED1		PT1511	10TM-S1	

* Items C72A, C72B, C72C, R85A, R85B and R85C are combined in one unit.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3000Ω	½	145164	F1-10	RTV-474	QJ-20 ⊕	UF32R	Picture (Panel)
B	500KΩ	½		R2-41			UR65A ⊕ †	Volume (Rear)
C	Switch			KR-1			US-26	Attach to R1B.
R2A	1Meg	½	145160	A47-1Meg-S	Q11-137		TA16L	Horizontal Hold
B	Shaft		Not Req.	AK-4	KS6-3		Not Req.	Attach to R2A.
R3A	1Meg	½	145180	A8-S9	A47-1Meg-S	Q11-137	TA16L	Horizontal Hold
B	Shaft		Not Req.	AK-4	KS6-3		Not Req.	Attach to R3A.
R4A	250KΩ	½	145157	A8-S0	A47-250K-S	Q11-130	TA35L	Brightness
B	Shaft		Not Req.	AK-4	KS6-3		Not Req.	Attach to R4A.
R5A	5Meg	½	145159	A8-S7	A47-7.5Meg-S	Q11-143	U-23	Vertical Size
B	Shaft		Not Req.	AK-4	FK8-½		Not Req.	Attach to R5A.
R6A	5000Ω	½	145158	A8-S2	A47-5000-S	Q11-14	TA35L	Vertical Linearity
B	Shaft		Not Req.	Not Req.	FK8-½		Not Req.	Attach to R6A.
R6A	500KΩ	½	145163	A8-S8	A47-500K-S	Q11-133	TA35L	Vertical Linearity-See Note 1
B	Shaft		Not Req.	Not Req.	FK8-½		Not Req.	Attach to R6A.
R7A	40KΩ	½	145162	BX-31	A47-40K-S	Q11-123	TA54L	Horizontal Drive
B	Shaft		Not Req.	Not Req.	FK8-½		Not Req.	Attach to R7A.
R8A	500KΩ	½	145163	BX-58	A47-500K-S	Q11-133	TA55L	AGC
B	Shaft		Not Req.	Not Req.	FK8-½		Not Req.	Attach to R8A.

* Concentrikit Equivalent; K-2 K14, Base Elements and Shafts; B17-1D, P1-126 (Panel) B13-133, R2-216 (Rear) T6-1 (Switch)

† Universal Replacement (Mallory Exact Duplicate Part No. UZ-2S2I)
Note L Used in early versions only.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
R9	820Ω	½			
R10	2200Ω	½			
R11	33KΩ	½		BTA-33K	
R12	22KΩ	½		BTS-22K	
R13	47KΩ	½		BTS-47K	
R14	270KΩ	½		BTS-270K	
R15	180KΩ	½		BTS-180K	
R16	680Ω	½		BTS-680	
R17	10KΩ	½		BTS-10K	
R18	3300Ω	½			
R19	180KΩ	½			
R20	15KΩ	½			
R21	100KΩ	½		BTS-100K	
R22	100KΩ	½		BTS-100K	
R23	100KΩ	½		BTS-100K	
R24	82000Ω	½		BTS-82K	
R25	100KΩ	½	149113	BTS-100K	
R26	22KΩ	½	38174	BTS-27K	
R27	2.7Meg	½	38186	BTS-2.7Meg	
R28	270KΩ	½	38184	BTS-270 K	
R29	390KΩ	½	38188	BTS-390K	
R30	68KΩ	½	38179	BTS-68K	
R31	330Ω	½	149079	BTS-330	
R32	2200Ω	½	38165		
R33	1000Ω	½	149101	BTS-1000	
R34	47Ω	½	38143	BTS-47	
R35	1000Ω	½	149101	BTS-1000	
R36	33KΩ	½	38175		
R37	10KΩ	½	38170		

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
R38	1000Ω	½	149101	BTS-1000	
R39	10KΩ	½	149107		
R40	33KΩ	½	149404	BTS-33K	
R41	47Ω	½	38142	BTS-47	
R42	10KΩ	½	38170		
R43	1000Ω	½	149101	BTS-1000	
R44	220Ω	½	38150	BTS-220	
R45	4700Ω	½	38168	BTS-4700	
R46	470KΩ	½	149117	BTS-470K	
R47	240KΩ	½	38186	BTS-390K	
R48	3200Ω	½	149098	BTS-2200	
R49	1800Ω	½	149047	BTS-1800	
R50	4700Ω	½	38168	BTS-4700	
R51	2200Ω	½	38165	BTS-2200	
R52	68KΩ	½	149112	BTS-68K	
R53	150KΩ	½	149398	BTS-150K	
R54	270KΩ	½	38184	BTS-270K	
R55	22KΩ	½	149384	BTS-22K	
R56	560Ω	½	38155	BTS-560	
R57	220Ω	½	149097	BTS-220	
R58	47KΩ	½	149131	BTS-47K	
R59	27KΩ	½	38174	BTS-27K	
R60	39KΩ	½	38176	BTS-39K	
R61	47KΩ	½	149131	BTS-47K	
R62	22KΩ	½	149099	BTS-22K	
R63	10Meg	½	149125	BTS-10Meg	
R64	330KΩ	½	149126	BTS-330K	
R65	820K	½	38190	BTS-820K	
R66	820K	½	38190	BTS-820K	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
R87	2200Ω	½	149103	BTS-2200	
R88	47KΩ	½	149148	BTA-47K	
R89	330Ω	2	149030	BTB-330	
R90	330Ω	2	149030	BTB-330	
R91	470KΩ	½	149117	BTS-470K	
R92	18KΩ	½	38173	BTS-18K	
R93	22KΩ	½	149384	BTS-22K	
R94	4700Ω	½	38168	BTS-4700	
R95	270Ω	1	149403	BTA-270	
R96	1Meg	½	149119	BTS-1Meg	
R97	150KΩ	½	149114	BTS-150K	
R98	330KΩ	½	38185	BTS-330K	
R99	150KΩ	½	149398	BTS-150K	
R100	2.2Meg	½	149121	BTS-2.2Meg	
R101	3900Ω	½	38166	BTS-3900	
R102	2200Ω	½	38165	BTS-2200	
R103	4700Ω	½	38168	BTS-4700	
R104	100KΩ	½	149113	BTS-100K	
R105A	32KΩ	½		BTS-32K	
B	8200Ω	½	▲128200	BTS-8200	
C	8200Ω	½		BTS-8200	
R86	1.2Meg	½		BTS-1.2Meg	Note 1
R87	1Meg	½	149119	BTS-1Meg	
R88	8200Ω	½	38189	BTS-8200	
R89	10KΩ	½	149107	BTS-10K	

ITEM No.	RATING OHMS	RATING WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
R90	1Meg	½	149119	BTS-1Meg	
R91	470Ω	½	149136	BTS-470	
R92	560Ω	½			
R93	560Ω	½			
R94	100KΩ	½	149385		
R95	100KΩ	½	149385		
R96	560KΩ	½	38188		
R97	10KΩ	½	149107	BTS-10K	
R98	22Ω	2	149037		
R99	100KΩ	½	149385		
R100	470KΩ	½	149117		
R101	180KΩ	½	149401		
R102	150Ω	½	38160		
R103	120KΩ	½	38181		
R104	68KΩ	½	38179		
R105	470KΩ	½	149117		
R106	68Ω	½	149094		
R107	68Ω	½	149094		
R108	560Ω	3	149082		
R109	4700Ω	3	149051		
R110	4700Ω	½	38168		
R111	1Ω	½	149027		
R112	1000Ω	½			
R113	4500Ω	4	149408	1 3/4A-4500	
R114	100KΩ	3	149113	BTS-100K	

Note 1. Some versions use a 1Meg ½W resistor in this application (Mfgr. Part No. 149119).
* R85A, R85B, R85C, C72A, C72B, C72C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	SEC. 1	SEC. 2	SEC. 3	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T1	117VAC	580VCT	5VAC	12.6VCT	161450	P9739 ①		P-8167 ①		R-6BC ②
	1: 48A	.210ADC	3A	4: 4.5A						

① Series 6.3V windings for secondary #2.
② Series 6.3V ⓖ 6A windings for secondary #3, tap 6.3V ⓖ 1.2A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
T2	Vert. Osc. Trans.	161471	B6702	A-3003	209T1 ①	V405	A-8125	26A03	A-27X
T3	Horiz. Output Trans.	161283	P2411 *	E7V3-S *	230T1 *	V-03 *③	A-8265 *	FLT-24 *	D-24 *
T4	Vert. Output Trans.	161269	Z1804	A-3037	222T1	V313	A-8123	26B52	A-102X
T5A	Yoke Horiz. (24MM)	114782	DF-605 ③	MDF-75 ③	322DU ③	T70F30/ 43 ③ ⑤	DY-15A ③	Y-10 ③④	Y-19-1 ③ ⑤
	Vert. (36.5MM)								
T6	Width Coil (1.2 to 7.8MH)	114146	RF800 ③	MWC-6 ③	213R1	301R15	WC-8	WC-22	WC-12 ③

1) Drill new mounting hole(s).
2) Available by special order only.
3) Connect horizontal damping network across terminals #3 & #7, use original if necessary.
4) Remove damping network from terminals #1 & #2, connect original horizontal damping network to terminals #3 & #7, if necessary.
5) Connect to terminals #3 & #4.
6) Enlarge mounting hole.
7) Connect to coded red & blue terminals.
8) Use original rear cover & centering device.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
4	9	9	9	4	9	9	9
3	8	8	8	3	8	8	Jumper 7 & 8
2	3	3	3	2	3	3	3
1	1	1	1	1	1	1	1
Connect Width Coil Across	1 & 2	1 & 3	1 & 3	1 & 2	1 & 3	1 & 3	1 & 3

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	IMPEDANCE SEC	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T7	5,622Ω	3.1Ω	161265	Z1801	A-3928	A-3876	34S50	S-3X	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP	Stromberg-Carlson PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	4" x 6"	PM	3.1Ω	155911	46A07	24652	1 Used in KB Models.
	6" x 9"	PM	3.1Ω	155953	69A3	23S51	
	6" x 9"	PM	3.1Ω	155918 ①	69A2	23S51	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI	DC RES. SEC	Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0ΩCT						
L2	Fil. Choke	0Ω						
L3	Fil. Choke	0Ω						
L4	Cathode Choke	0Ω						
L5	UHF Osc. Coupling Coil	0Ω						
L6	UHF Osc. Coupling Coil	0Ω						
L7	UHF IF Output Coil	0Ω						Tapped

COILS (cont)

ITEM No.	USE	DC RES. PRI	DC RES. SEC	Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L8A	VHF Ant. Coil	0ΩCT	0Ω	172302				Channel 2
B	VHF Ant. Coil	0ΩCT	0Ω	172303				Channel 3
C	VHF Ant. Coil	0ΩCT	0Ω	172304				Channel 4
D	VHF Ant. Coil	0ΩCT	0Ω	172305				Channel 5
E	VHF Ant. Coil	0ΩCT	0Ω	172306				Channel 6
F	VHF Ant. Coil	0ΩCT	0Ω	172307				Channel 7
G	VHF Ant. Coil	0ΩCT	0Ω	172308				Channel 8
H	VHF Ant. Coil	0ΩCT	0Ω	172309				Channel 9
I	VHF Ant. Coil	0ΩCT	0Ω	172310				Channel 10
J	VHF Ant. Coil	0ΩCT	0Ω	172311				Channel 11
K	VHF Ant. Coil	0ΩCT	0Ω	172312				Channel 12
L	VHF Ant. Coil	0ΩCT	0Ω	172313				Channel 13
M	UHF IF Coil	0Ω	0Ω	172301				Includes 5.6KΩ resistor
L11	Fil. Choke	0Ω						
L12	Conv. Plate	1Ω	0Ω					
L13	1st Video IF			114456				Includes 39.75MC Trap
L14	RF Choke	4.4Ω		114887		19-1000		1 Microhenry, IRC Part No. CL-1
L15	2nd Video IF	.2Ω	.2Ω	114456		17-5003	TV-13T	Includes 41.25MC Trap
L16	3rd Video IF	.2Ω	.2Ω	114457		17-5003	TV-13S	Includes 47.25MC Trap
L17	Series Peaking Coil	11Ω		114758		19-4350	TV-18T	233 Microhenries, Wound on 22KΩ resistor
L18	Shunt Peaking Coil	32Ω		114788		19-4880 ▪		4643 ▪ 1030 Microhenries; Wound on 1.5KΩ resistor
L19	4.5MC Trap	L.3Ω		114417		20-1004	TV-18I	1469
L20	Series Peaking Coil	8.5Ω		114789		19-3180 ▪		6230 ▪ 148 Microhenries; Wound on 39KΩ resistor
L21	Shunt Peaking Coil	13Ω		114776		19-3250 ▲	TV-18S ▲	6181 ▲ 260 Microhenries, Wound on 2.2Meg resistor
L22	1st Sound IF	4.3Ω		114419		20-1004 ▪	TV-18I ▪	1470
L23	2nd Sound IF	4.3Ω		114419		20-1004 ▪	TV-18I ▪	1470
L24	Ratio Det.	46Ω	L.7QCT	114418		17-3497	TV-11S	6305 Tertiary Windings-7Ω
L25	RF Choke	L.5Ω		114698		19-1003		4606 2.2Microhenries, IRC Part No. CLA

* Parallel with L.5KΩ resistor.
▪ Parallel with 39KΩ resistor.
▲ Parallel with 2.2Meg resistor.
● Disconnect cap. across coil.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI	DC RES. SEC	Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordorson PART No.	NOTES
L26	110Ω		114132		19-1576	TV-16S	230R1	H-100	HB-3	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 100Ω (%)	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.
L27	210ADC	84Ω	L.5HY	161051	C9037 ①	C-3996 ①	C-3326 ①	28C44 ①	C-17A ①

1 Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	Stromberg-Carlson PART No. FUSE	Stromberg-Carlson PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1/4A 250V	128010		312.250 (3AG 1/4A)	357001	AGC 1/4	4605

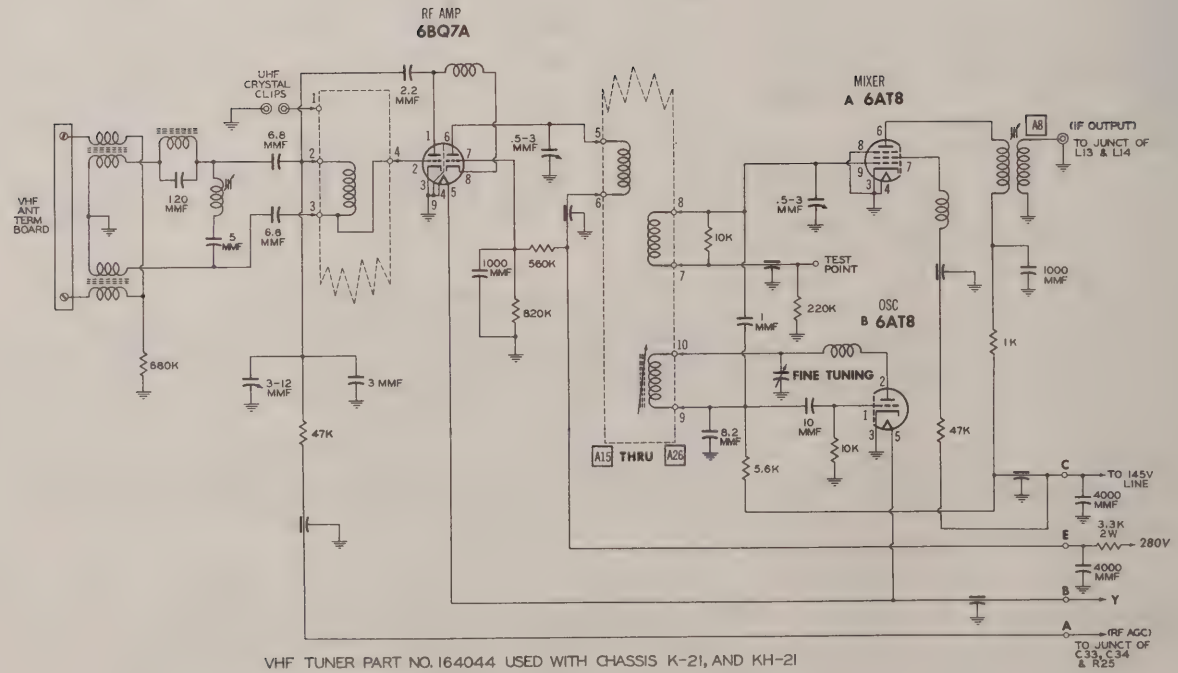
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	Stromberg-Carlson PART No.	SYLVANIA PART No.	NOTES
M2	1N82A	162234	1N82A	UHF Mixer-Chassis K-23, KH-23 only
M3	1N84	162219	1N60 or 1N23	Video Det.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M4	Dial Light	137010	#46
M5	Tuner	164040	VHF-UHF combination - Chassis K-22, KH-22
M6	Tuner	164044	VHF - Chassis K-21, KH-21
M7	Trap	83A64917-3	VHF Ant. Input Filter - Chassis K-22, KH-22
M8	Video Detector Assembly	114458	Includes M3, coils and capacitor
M9	Centering Device	*	Part of deflection yoke (T5) rear cover
M10	Ion Trap	114778	
	Cabinet	108517	Models K-21TQ, KH-21TQ, K-22TQ, KH-22TQ
	Cabinet	108518	Models K-21TM, KH-21TM, K-22TM, KH-22TM
	Cabinet	108522	Models K-21TB, KH-21TB, K-22TB, KH-22TB
	Cabinet	108519	Models K-21CM, KH-21CM, K-22CM, KH-22CM
	Cabinet	108520	Models K-21CB, KH-21CB, K-22CB, KH-22CB
	Cabinet	108514	Models K-21HM, KH-21HM, K-22HM, KH-22HM
	Cabinet	108515	Models K-21HB, KH-21HB, K-22HB, KH-22HB
	Cabinet	108516	Models K-21HW, KH-21HW, K-22HW, KH-22HW
	Cabinet	108526	Models K-21HCM, KH-21HCM, K-22HCM, KH-22HCM
	Cabinet	108527	Models K-21HCB, KH-21HCB, K-22HCB, KH-22HCB
	Cabinet	108509	Marlite - Models K-21HCW, KH-21HCW, K-22HCW, KH-22HCW
	Cabinet	108534	Marlite - Models K-21CM, KH-21CM, K-22CM, KH-22CM
	Cabinet	108535	Marlite - Models K-21HB, KH-21HB, K-22HB, KH-22HB
	Cabinet	108507	Marlite - Models K-21HCM, KH-21HCM, K-22HCM, KH-22HCM
	Cabinet	108508	Marlite - Models K-21HCB, KH-21HCB, K-22HCB, KH-22HCB



VHF TUNER PART NO. 164044 USED WITH CHASSIS K-21, AND KH-21

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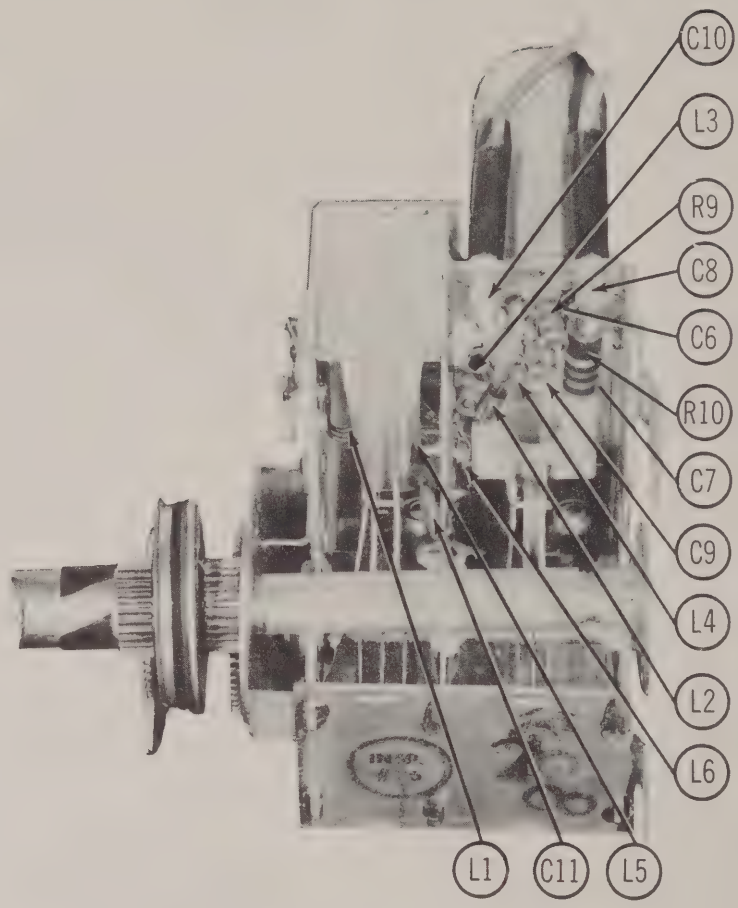
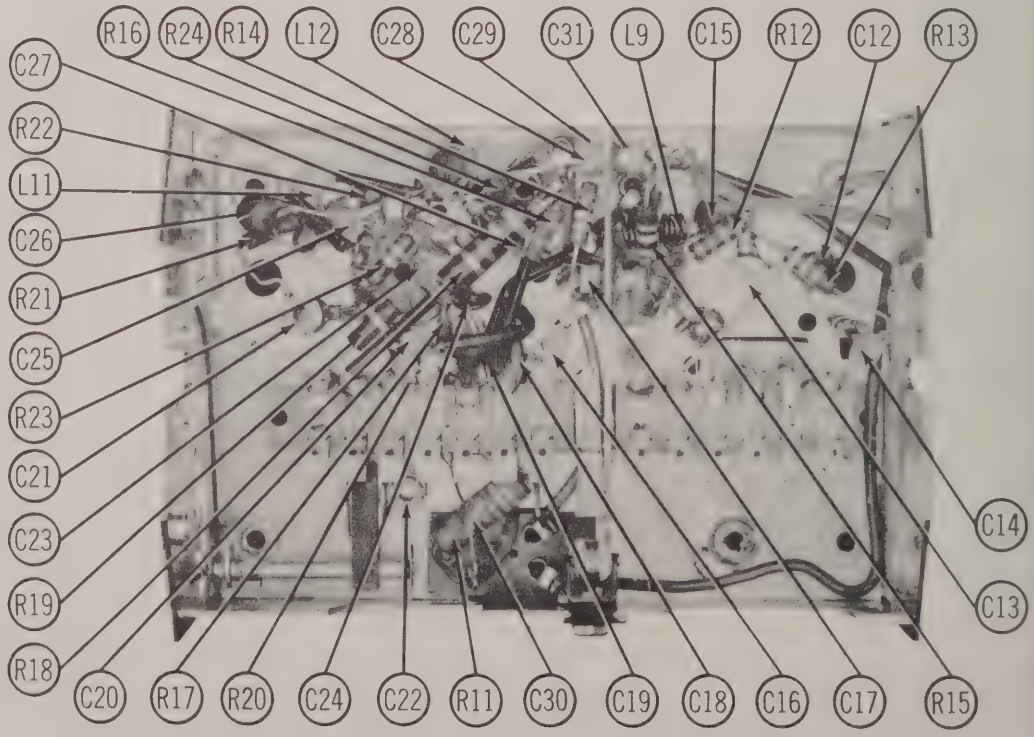
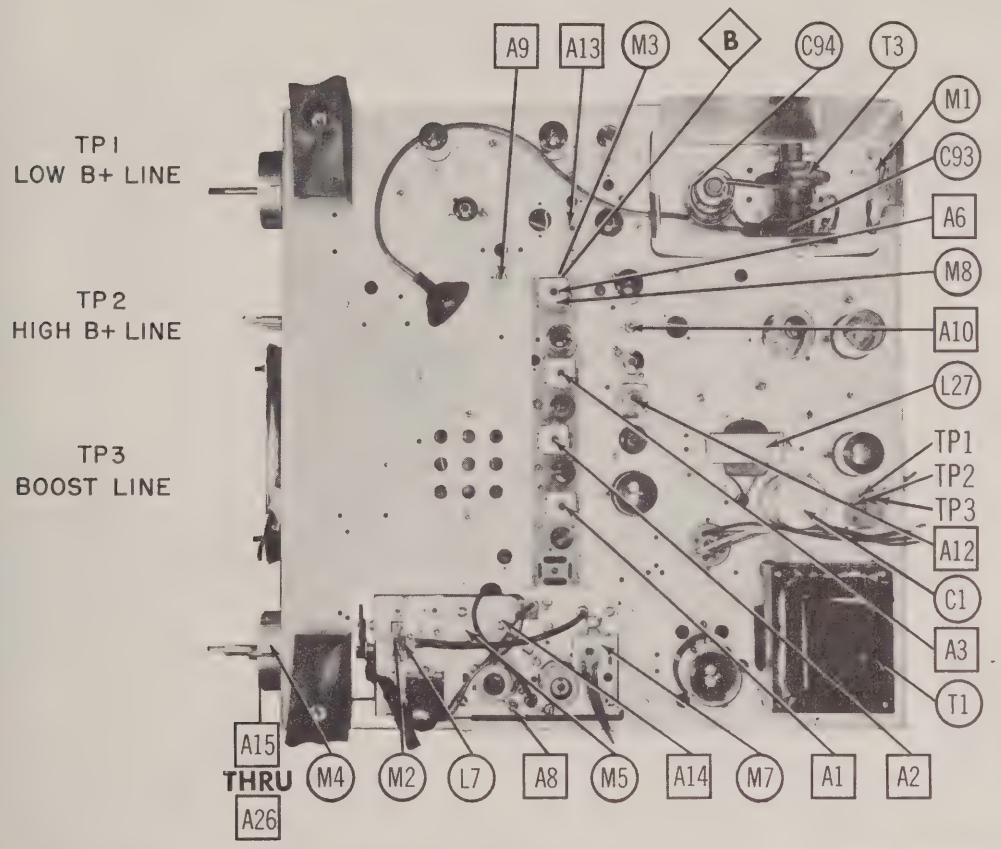
ALTERNATE VHF TUNER SCHEMATIC



UHF TUNER-RIGHT SIDE



VHF TUNER-BOTTOM VIEW



CHASSIS TOP VIEW

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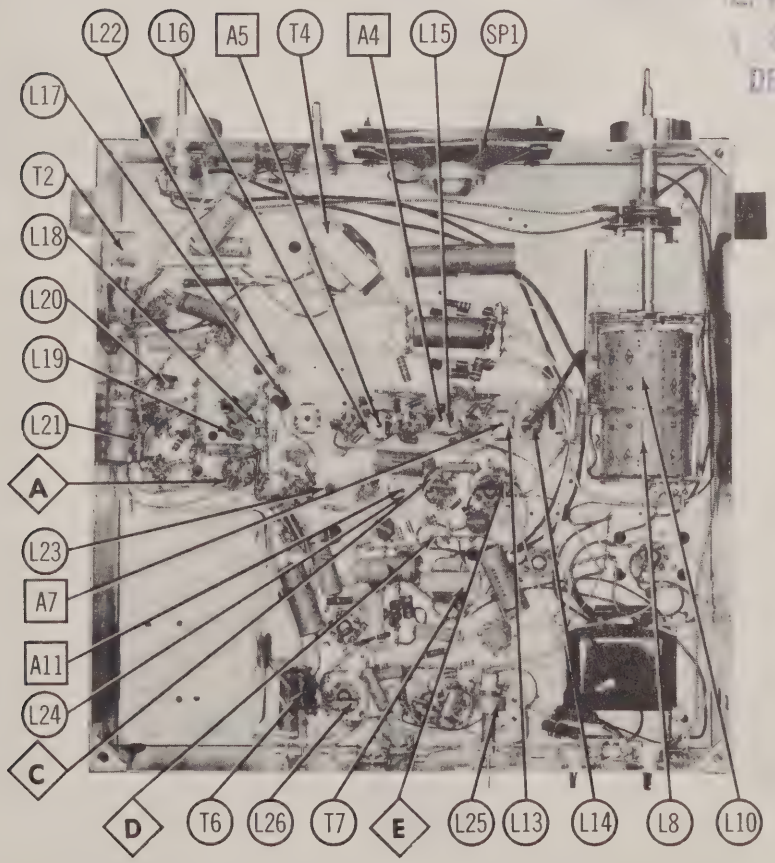
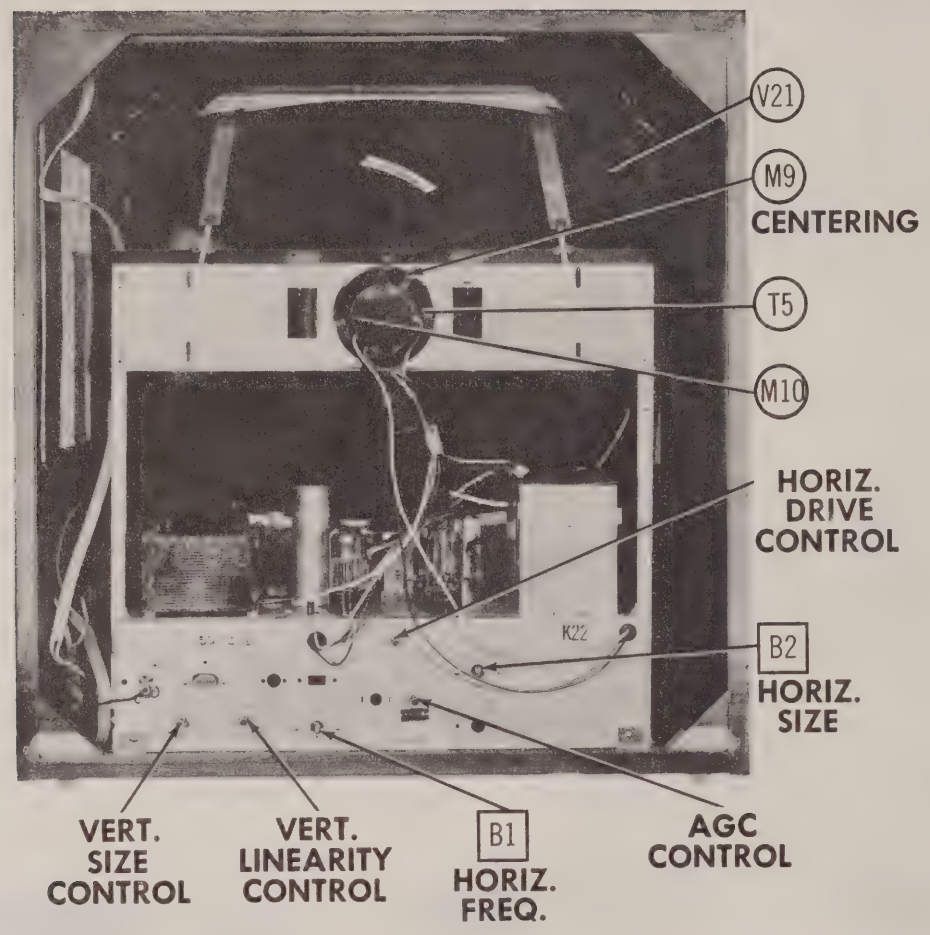
DENVER COLORADO



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



CABINET—REAR VIEW

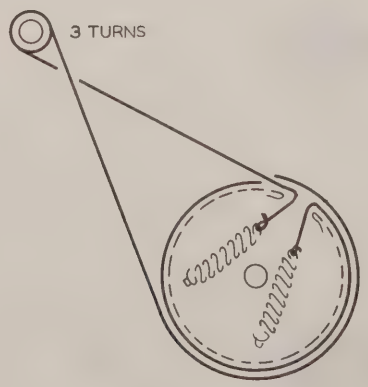
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive control (R7) located on rear panel for best compromise between brightness and horizontal linearity without a vertical white line or compression near the center of the screen.

Adjust the horizontal size slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

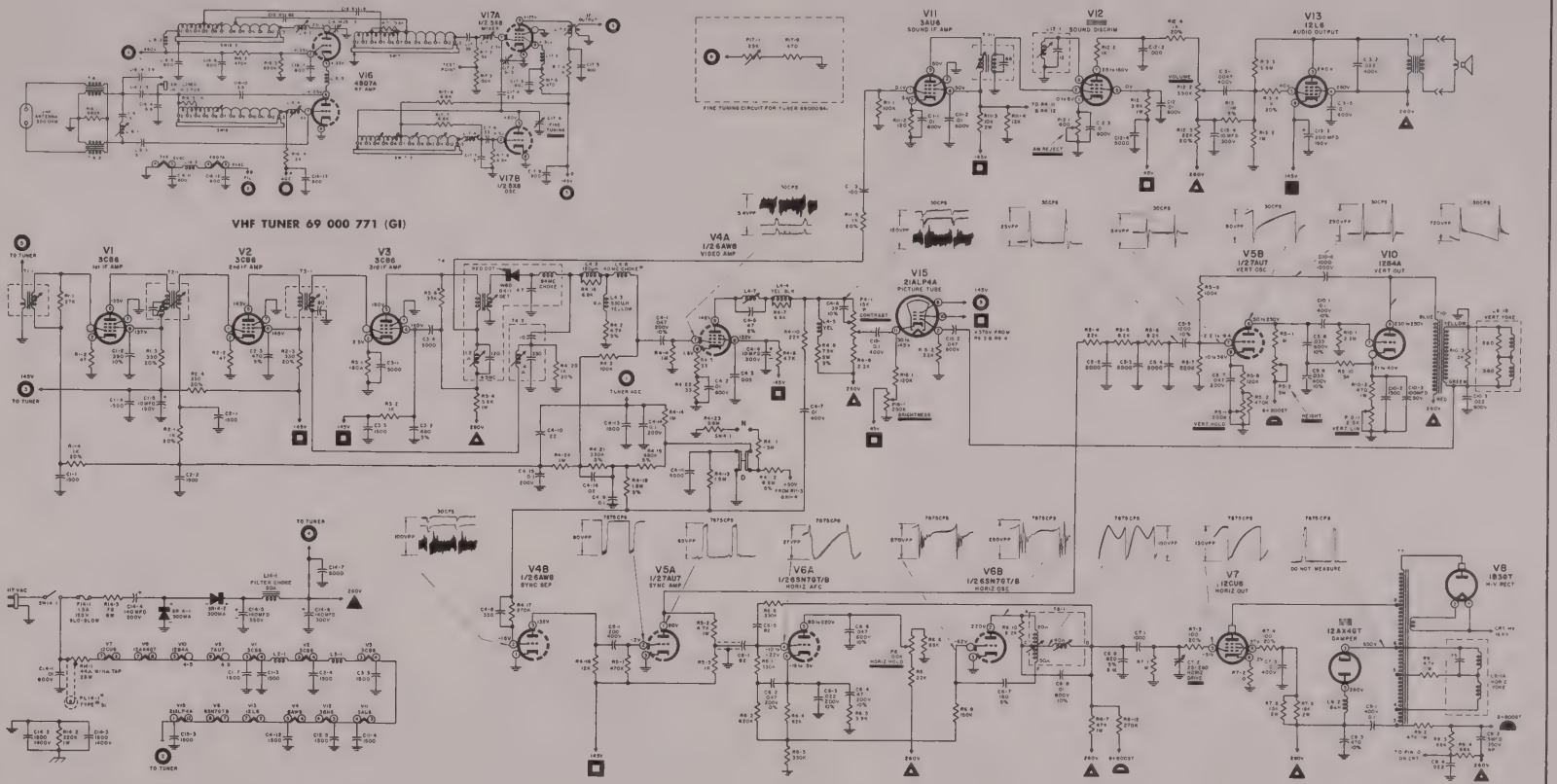


TUNING PULLEY IN MAX COUNTER CLOCKWISE POSITION

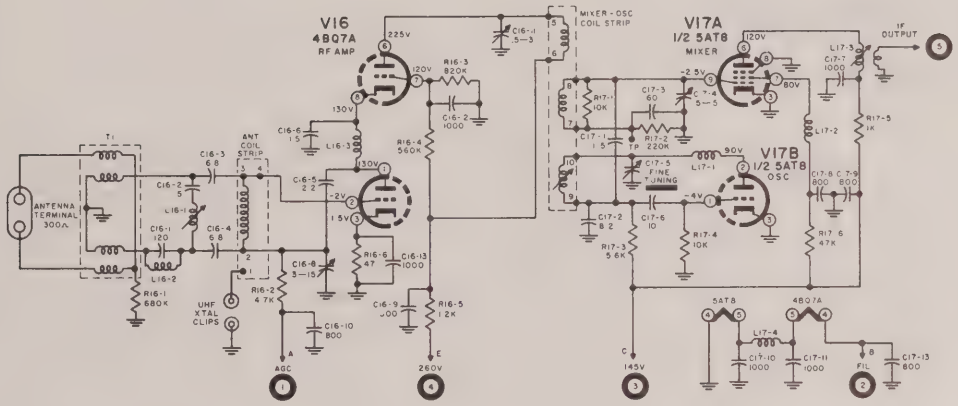
UHF DRIVE CORD STRINGING

2001, 2002 and 2003
Television Receiver Chassis

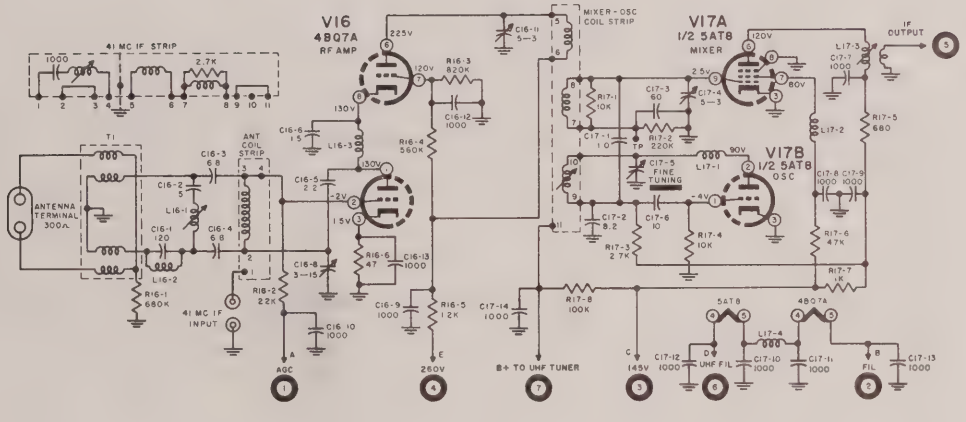
(For Model Listing See Reverse Side.)



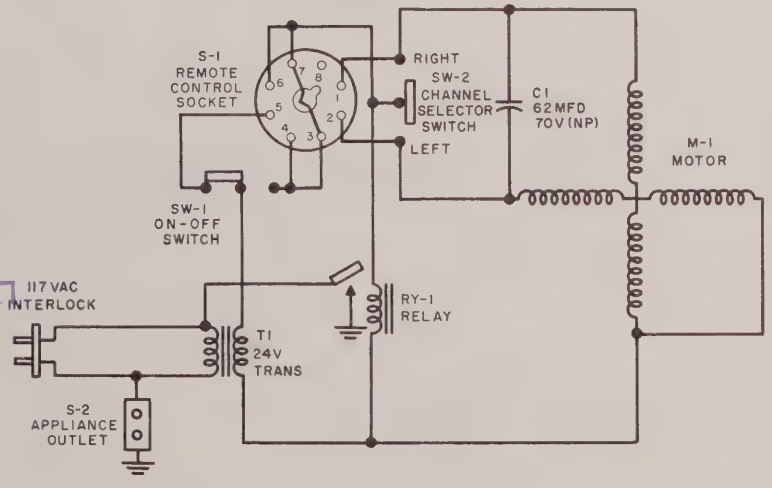
VHF TUNER 69 000 791 (SC 12 POS)



VHF TUNER 69 000 821 (SC 13 POS)



POWER TUNING



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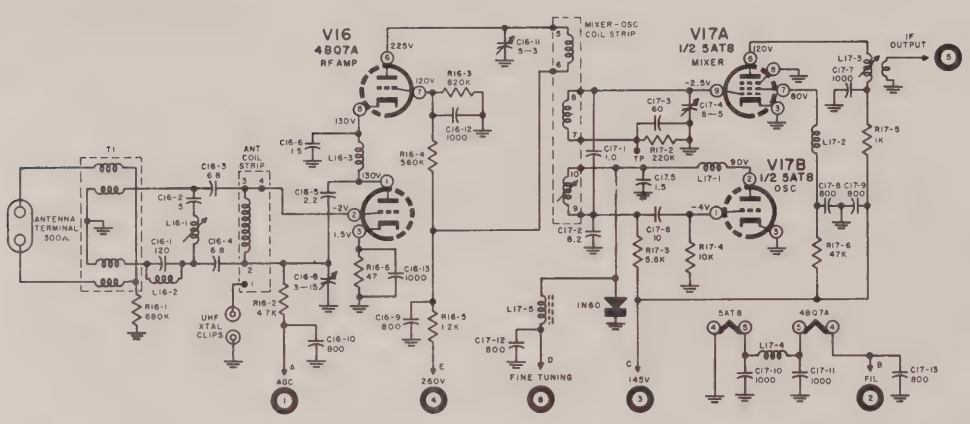
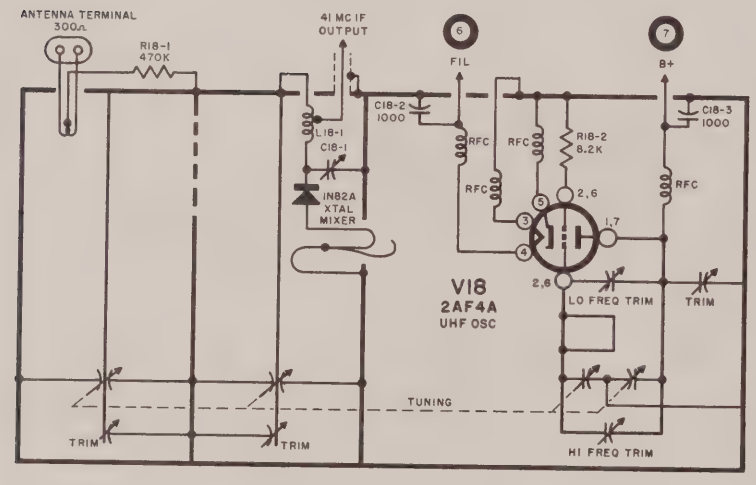
L. F. BLANK
PROPE

VHF TUNER 69 000 841 (SC 12 POS)



UHF TUNER 69 000 831 (RC)



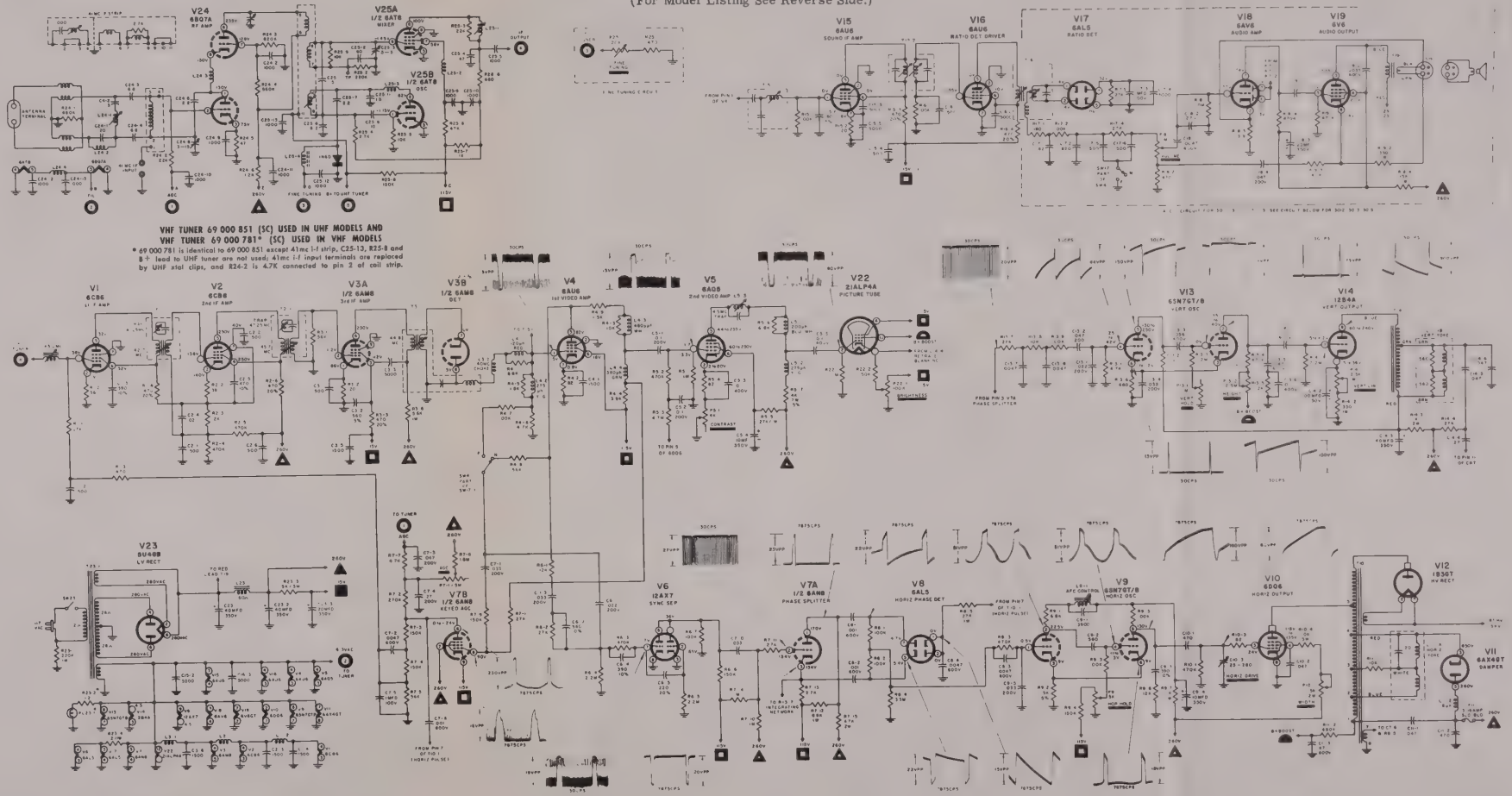
CBS MODELS

6K321	(Ch. 2001)	6KR328	(Ch. 2003)
6K321U	(Ch. 2002)	6T301	(Ch. 2001)
6K322	(Ch. 2001)	6T301U	(Ch. 2002)
6K322U	(Ch. 2002)	6T303	(Ch. 2001)
6K327U	(Ch. 2002)	6T303U	(Ch. 2002)
6K328U	(Ch. 2002)	6T304	(Ch. 2001)
6KR323	(Ch. 2003)	6T304U	(Ch. 2002)
6KR324	(Ch. 2003)	6TR305	(Ch. 2003)
6KR327	(Ch. 2003)	6TR306	(Ch. 2003)

SCHEMATIC COURTESY CBS-COLUMBIA

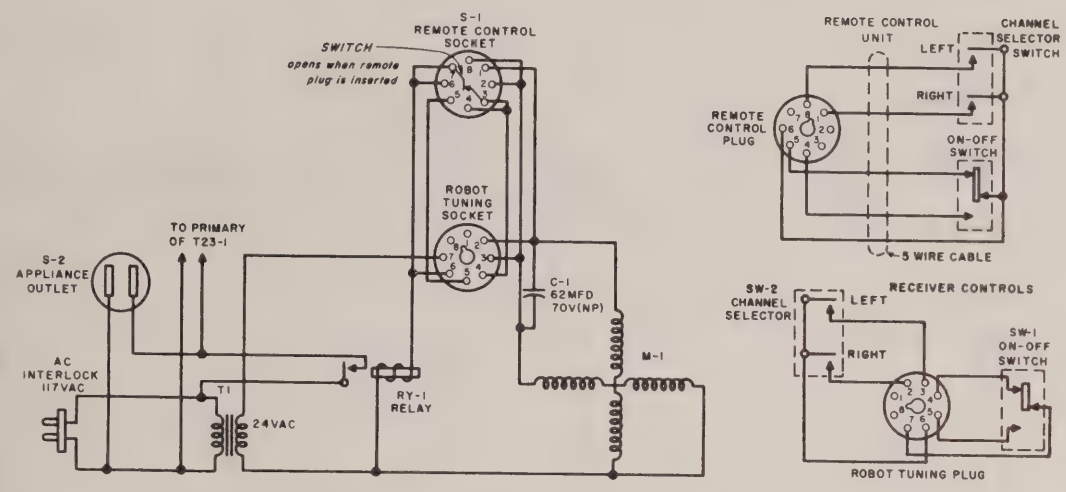
Television Receiver Chassis
3001, 3002, 3003, 3012, 3013 and 3015

(For Model Listing See Reverse Side.)



CBS

ROBOT TUNING



SCHEMATIC NOTES

1. Solid geometric symbols indicate B+ voltage sources—open symbols indicate points of application.
2. Numbered circles indicate tuner lead connections.
3. Component symbols are coded to indicate tube near which component is located on schematic. Ex. C9-2; capacitor, located near V9.
4. All d-c voltages measured with a VTVM connected between the chassis and tube socket terminals, with channel selector set between channels and the Normal-Fringe switch (SW4-1) in the normal position. Where readings are affected by control settings, voltages are shown for the clockwise and counterclockwise positions of the controls. Tuner voltages taken with channel selector set to an unused channel and the Normal-Fringe switch in the normal position.
5. All waveforms and peak to peak readings taken with strongest signal available at maximum contrast; horizontal and vertical holds set at normal position.
6. All resistors are ½W, ±10% unless otherwise indicated. K=X1,000; M=X1,000,000.
7. All capacitors are 500 WV unless otherwise indicated. Values less than one are microfarads and values more than one are micro-microfarads, unless otherwise indicated.
8. All coil and winding resistances taken with the components disconnected from the circuit.

* Indicates change in schematic, as listed below.

In 3003, 3013 and 3015 chassis, R23-2 is .82 ohm, WW, #31 000 930 and PL 23-1 is replaced by two type #44 bulbs.

CBS MODELS

7K325	(Ch. 3001)	7KR333	(Ch. 3013)
7K325U	(Ch. 3002)	7KR334	(Ch. 3013)
7K326	(Ch. 3001)	7KR335	(Ch. 3015)
7K326U	(Ch. 3002)	7KR336	(Ch. 3015)
7K329U	(Ch. 3002)	7T307	(Ch. 3001)
7K330U	(Ch. 3002)	7T307U	(Ch. 3002)
7K332U	(Ch. 3002)	7T309	(Ch. 3001)
7K333U	(Ch. 3012)	7T309U	(Ch. 3002)
7K334U	(Ch. 3012)	7T310	(Ch. 3001)
7KR329	(Ch. 3003)	7T310U	(Ch. 3002)
7KR330	(Ch. 3003)	7TR311	(Ch. 3003)
7KR332	(Ch. 3003)	7TR312	(Ch. 3003)

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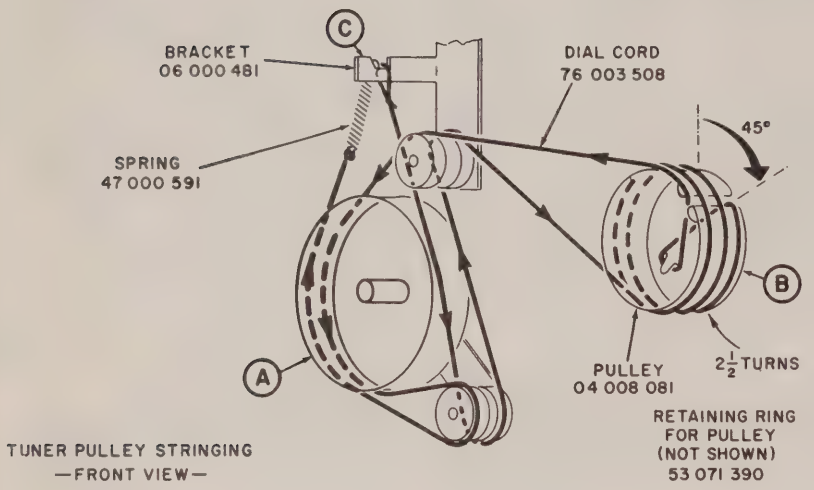
DENVER, COLORADO



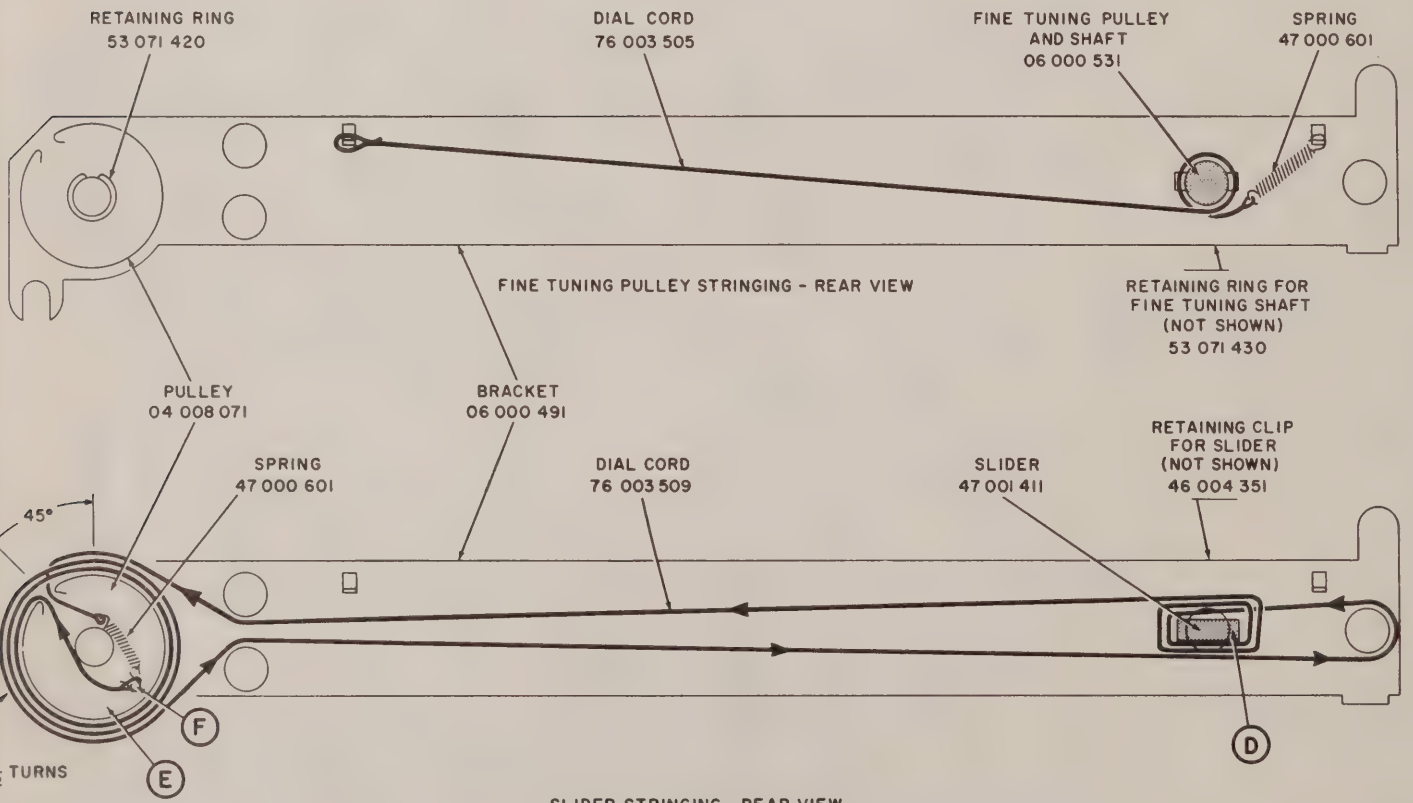
TUNER PULLEY STRINGING
—FRONT VIEW—

TUNER PULLEY STRINGING

To string rear tuner pulley, start with tuner pulley (A, in extreme counter-clockwise position, and pulley (B) positioned with opening 45-degrees from vertical axis, as shown at left. Place one loop of dial cord on lug (C) and string dial cord in direction of arrows, as shown.

SLIDER STRINGING

To string slider (D), start with slider at extreme right position, and pulley (E) positioned with opening 45-degrees from vertical axis as shown below. Place one loop of dial cord on pulley tab (F) and string cord in direction of arrows.



SLIDER STRINGING - REAR VIEW

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . unless it has been purchased as part of a complete volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

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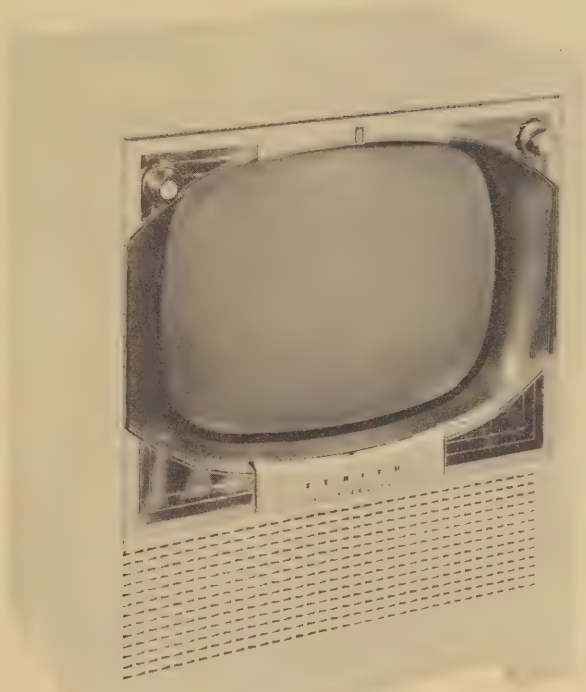

ZENITH MODELS Y2671R, RU,
Y2672E, EU (Ch. 22Y21, U)

ZENITH MODEL Y2672E

TRADE NAME	Zenith Models Y2671R, Y2672E (Ch. 22Y21), Y2671RU, Y2672EU (Ch. 22Y21U)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.41 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 1
Horizontal Sweep Circuit Adjustments 18
Parts List and Descriptions 14, 15, 16
Photographs
Cabinet-Rear View 18
Capacitor Identification 3, 10
Chassis-Top View 11
RF Tuner 17, 19
Resistor Identification 4, 9
Photographs (Cont)
Trans., Inductor & Alignment Identification 12
Resistance Measurements 8
Servicing in the Field 1
Schematic (Alternate Tuner) 13
Schematic (TV) 2
Tube Failure Check Chart 5
Tube Placement Chart (Bottom View) 8
Tube Placement Chart (Top View) 5

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from front panel of cabinet.

2. Remove 7 wood screws. Remove rear cover.

3. Remove volume control nut (cabinet front). Remove volume control.

4. Remove speaker leads, picture tube socket, yoke plug, HV lead and tuner cables between tuner and main chassis.

5. Remove 4 chassis bolts. Remove chassis.

TUNER REMOVAL

1. Disconnect cables between tuner and main chassis.

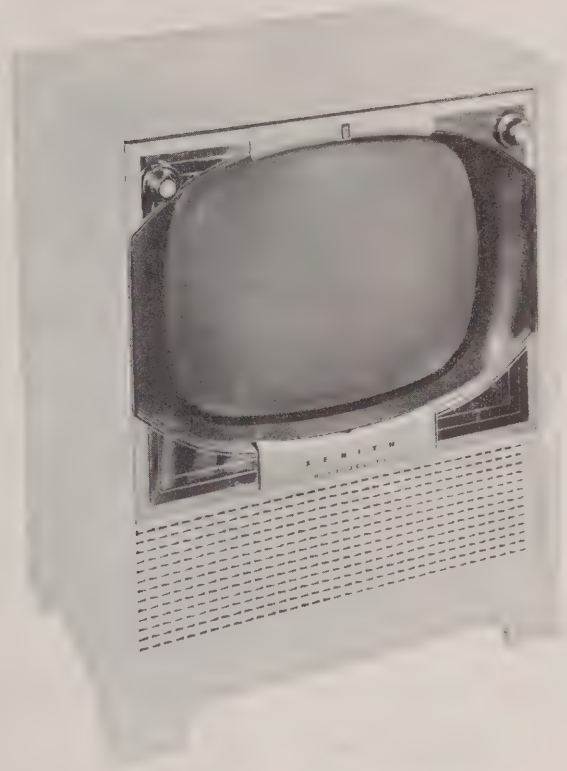
2. Remove 2 tuner bolts from rear of cabinet. Lower the rear of the tuner and slide out.

SPEAKER REMOVAL

1. Disconnect speaker leads.

2. Remove 4 speaker nuts from large speaker and remove

3. To remove small tweeters it will be necessary to pry staples from speaker flaps.



MODEL	CHASSIS
2672E	22Y21

ZENITH MODELS Y2671R, RU,
Y2672E, EU (Ch. 22Y21, U)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF tuner oscillator circuit, it is necessary to remove rear cover and supply power to set. Adjustments are made thru the hole marked "Bull's Eye Adjustment" and are accessible one at a time as the selector switch is turned to each channel. (Fine tuning control must be set to the center of its range before making adjustments). Use Zenith alignment wrench part #68-21 for adjustment.

PICTURE TUBE SAFETY GLASS CLEANING

Turn Zenith emblem (located at the top edge of the safety glass) 1/4 turn counter clockwise. Push escutcheon plate up and tilt glass out at top to remove. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator may be made from the front of the receiver. Adjust the horizontal hold (L22) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control located on rear apron of chassis for maximum volume and minimum buzz. If results are unsatisfactory, see alignment instructions.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

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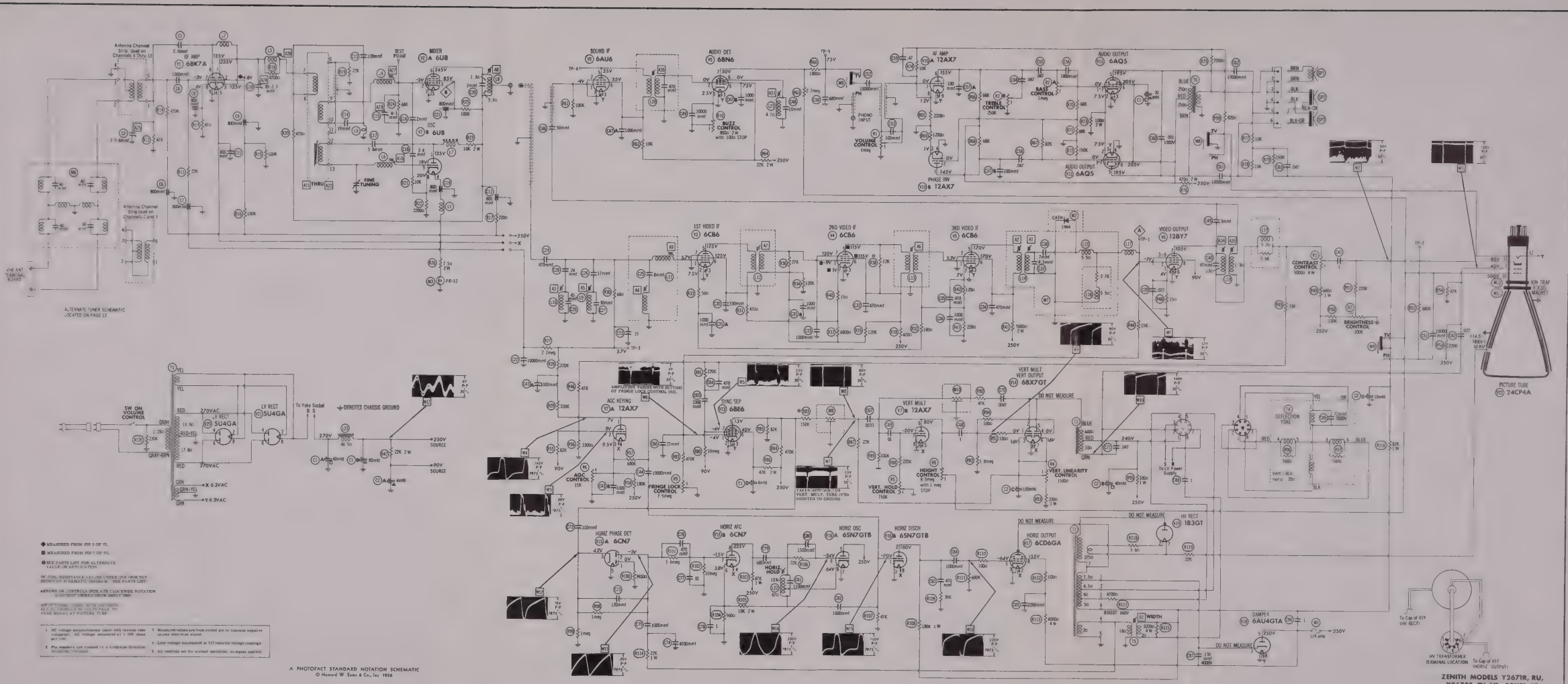
RF AMP Y1 6BK7A
MIXER Y2 A 6U8
OSC V7 B 6U8
SOUND IF V8 6AU6
AUDIO DET V9 6BN6
AF AMP V10 A 12AX7
PHASE INV V10 B 12AX7
AUDIO OUTPUT V12 6AQ5
AUDIO OUTPUT V13 6AQ5
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO OUTPUT V6 12BY7
AGC KEYING V7 A 12AX7
SYNC SEP V13 6BE6
VERT MULT V7 B 12AX7
VERT MULT VERT OUTPUT V14 6BX7GT
HORIZ PHASE DET V10 A 6CN7
HORIZ AFC V10 B 6CN7
HORIZ OSC V11 A 6SN7GTB
HORIZ DISCH V11 B 6SN7GTB
HORIZ OUTPUT V17 6CD6GA
HV RECT V19 1B3GT
DAMPER V18 6AU4GTA
LV RECT V21 5U4GA
PICTURE TUBE V22 24CP4A
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 13
SW ON VOLUME CONTROL
270VAC
LV RECT V21 5U4GA
To Yoke Socket
DENOTES CHASSIS GROUND
250V SOURCE
90V SOURCE
X 6.3VAC
Y 6.3VAC
CONTRAST CONTROL
BRIGHTNESS CONTROL
VOLUME CONTROL
TREBLE CONTROL
BASS CONTROL
BUZZ CONTROL
FINE TUNING
AGC CONTROL
FRINGE LOCK CONTROL
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
HORIZ HOLD
WIDTH
BOOST
DEFLECTION YOKE
HV TRANSFORMER TERMINAL LOCATION
To Cap of V19 (HV RECT)
To Cap of V17 (HORIZ. OUTPUT)
DO NOT MEASURE
AMPLITUDE VARIES WITH SETTING OF FRINGE LOCK CONTROL (R5)
TAKEN WITH PIX TUBE SHORTED TO GROUND
◆ MEASURED FROM PIN 1 OF V1.
■ MEASURED FROM PIN 7 OF V4.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC VOLTAGE MEASUREMENTS taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
Pin numbers are counted in a clockwise direction looking at bottom of tube.
1. Measured values are from socket pin to common negative unless otherwise stated.
2. Line voltage maintained at 117 volts for voltage readings.
3. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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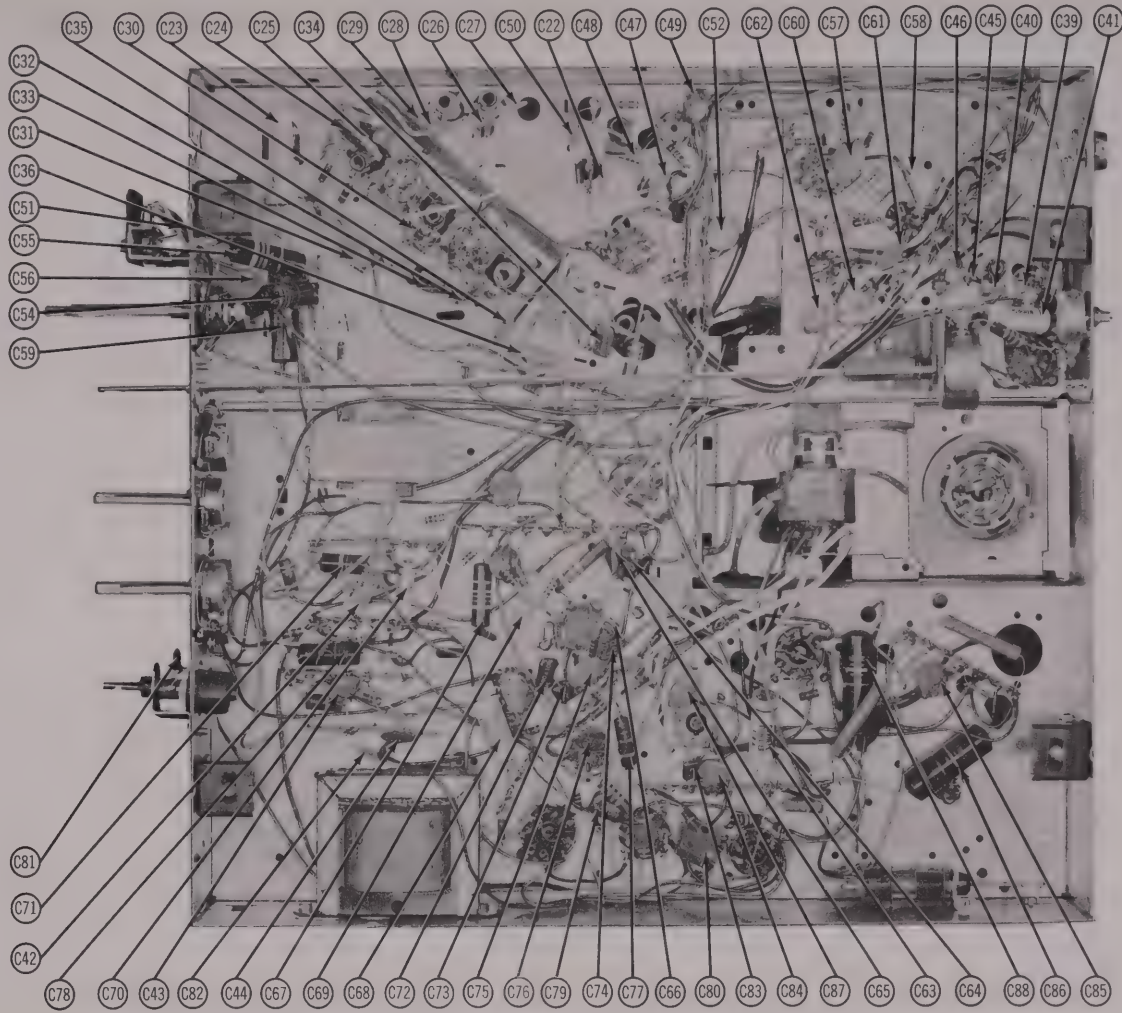
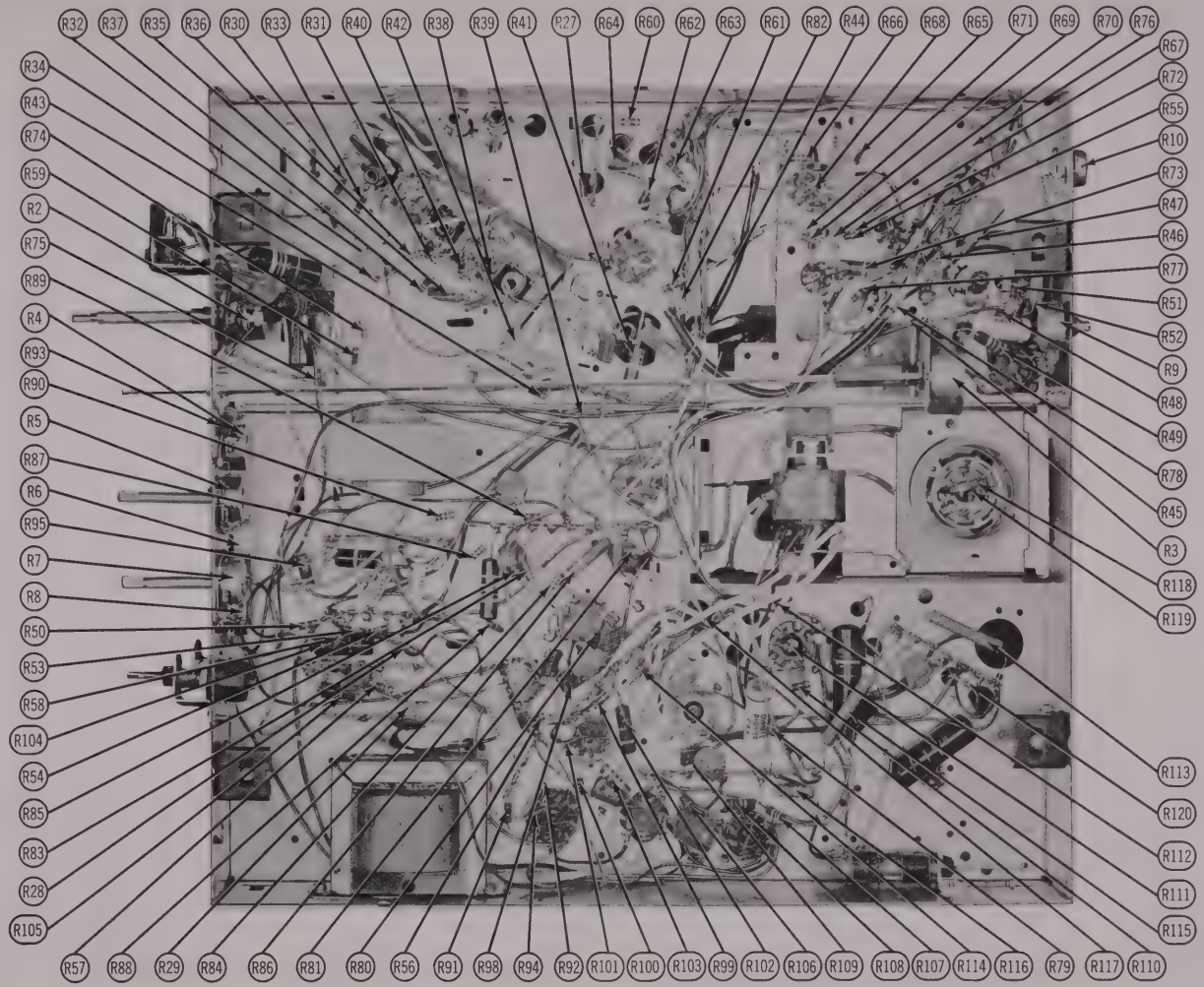
ZENITH MODELS Y2671R, RU, Y2672E, EU (Ch. 22Y21, U)

ZENITH MODELS
Y2671R, RU, Y2672E, EU (Ch. 22Y21, U)

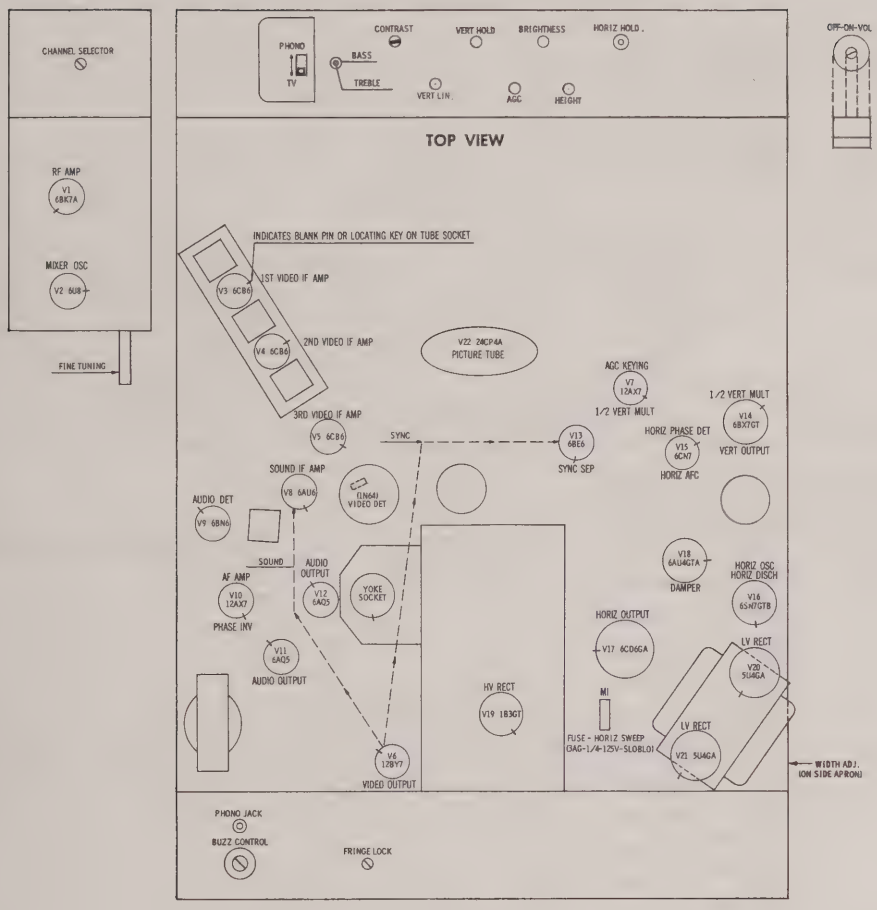


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

TUBE PLACEMENT CHART



PROPERTY OF
F. TECHNICIAN
ST.

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V22
Has pic, no sound - V8, V9, V10, V11, V12
Overloaded picture - V7

SYNC FAILURE
No vert. sync - V7, V13, V14
No horiz. sync - V13, V15, V16
No vert. or horiz. sync - V13

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V22, Fuse (M1)
No vertical deflection - V7, V14
Poor vert. linearity or foldover - V7, V14
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture -V16, V17, V18, V19, V20, V21
Vert. off freq. - V7, V13, V14
Horiz. off freq. - V13, V15, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the set is to be aligned with the picture tube removed, the high voltage lead should be securely taped away from the chassis.

VIDEO IF ALIGNMENT

Place the tuner turret mid-way between two channels.
Connect the negative lead of a 2 volt bias supply to the ungrounded side of C23. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	470MMF	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	44MC (10MC Swp)	39.75MC 45.75MC	See note above	Vert. Amp. thru 10K to point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1. If correct response cannot be obtained, check to see that the slugs are entering the coils from the outside ends of the coils.
2.	"	High side to point (B). Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5	Reduce bias to zero. Turn sweep generator output to maximum. Increase gain on scope to magnify trap portions of response curve. Adjust traps for response similar to Fig. 2.
3.	"	"	"	42.75MC 45.0MC 45.75MC	"	"	A6, A7, A8, A9	Replace 2 volt bias. Adjust for response curve similar to Fig. 3. Readjustment of A1 and A2 should not be required to obtain proper response.

VHF OSCILLATOR ALIGNMENT

The master oscillator adjustment A10 is made only if the individual oscillator adjustments fail to bring all channels within the range of the fine tuning control. If channels 2 through 6 fall with-in the fine tuning range, but the high channels do not, slight adjustment of A10 may bring the high channels in.
Ground the AGC lead from the tuner (yellow lead) to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC Swp)	59.75MC	2	Vert. Amp. thru 10K to point (A). Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 4.
			63MC (10MC Swp)	65.75MC	3		A12	
			69MC (10MC Swp)	71.75MC	4		A13	
			79MC (10MC Swp)	81.75MC	5		A14	
			85MC (10MC Swp)	87.75MC	6		A15	
			177MC (10MC Swp)	179.75MC	7		A16	
			183MC (10MC Swp)	185.75MC	8		A17	
			189MC (10MC Swp)	191.75MC	9		A18	
			195MC (10MC Swp)	197.75MC	10		A19	
			201MC (10MC Swp)	203.75MC	11		A20	
			207MC (10MC Swp)	209.75MC	12		A21	
			213MC (10MC Swp)	217.75MC	13		A22	

FIG. 1

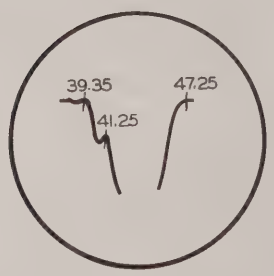


FIG. 2

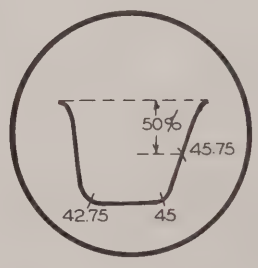


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT

Ground the AGC lead (yellow wire) from the tuner to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. Amp. to point (B). Low side to chassis.	A23, A24, A25	Adjust for response curve similar to Fig. 5.
6.	"	"	201MC (10MC Swp)	199.25MC 203.75MC	"	"	A26, A27	Adjust for response curve similar to Fig. 5. If passband is not correct, SLIGHTLY bend L4 (slotted tab in shield plate). Repeat steps 5 and 6 for optimum results on all channels.

UHF TUNER ALIGNMENT

Any attempt to peak any one particular channel will usually cause serious degradation of the other channels.
No attempt should be made to adjust the oscillator unless the calibration is off more than three channels. Turn the UHF tuning dial to channel 54. The rocker arm of the tuner should be horizontal. If it is not, loosen the set screw on the drive pulley and turn the tuner shaft independently of the pulley until the rocker arm is horizontal with the channel indicator at channel 54. Tighten the set screw.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	713MC (10MC Swp)	711.25MC	54	Vert. Amp. thru 10K to point (A). Low side to chassis.	A28, A29, A30	Adjust for response curve similar to Fig. 6. When adjusting A28 two responses may be found, the correct setting is with the adjustment of the most counter clockwise position.
8.	"	"	473MC (10MC Swp)	471.25MC	14	"		Check for response similar to Fig. 6. If the oscillator is off calibration more than 3 channels, adjust the oscillator travel (Osc. mixer and antenna travel adjustments are the round thumb screws on top of the tuner) adjustment to scale. Care must be exercised when making this adjustment not to move the rocker arm out of its bearing. Adjust the mixer and antenna travel adjustments for maximum amplitude response.
9.	"	"	887MC (10MC Swp)	185.25MC	83	"	A31, A32, A33	Adjust A31 to place marker at 50% as in Fig. 6. Adjust A32 and A33 for maximum amplitude of response.

SOUND IF ALIGNMENT

Connect an attenuator (Zenith Part No. S-17203 or equivalent) in series with the receiver antenna. Tune in a TV station and adjust the attenuator until the signal falls below the limiting level of the 6BN6 audio detector, as evidenced by hiss similar to super-regeneration.
Adjust the sound take-off transformer (A34 and A35), the sound IF coil (A36) and the quadrature coil (A37) for maximum sound and best quality.
Adjust the buzz control (R10) for minimum buzz. If the buzz cannot be eliminated with the buzz control, check the setting of the AGC control. If during any of the sound IF adjustments the signal rises above the limiting level (hiss disappears), increase the attenuation until the hiss returns.

FIG. 4

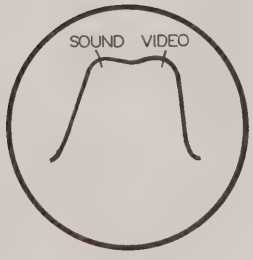


FIG. 5

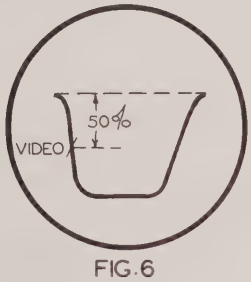
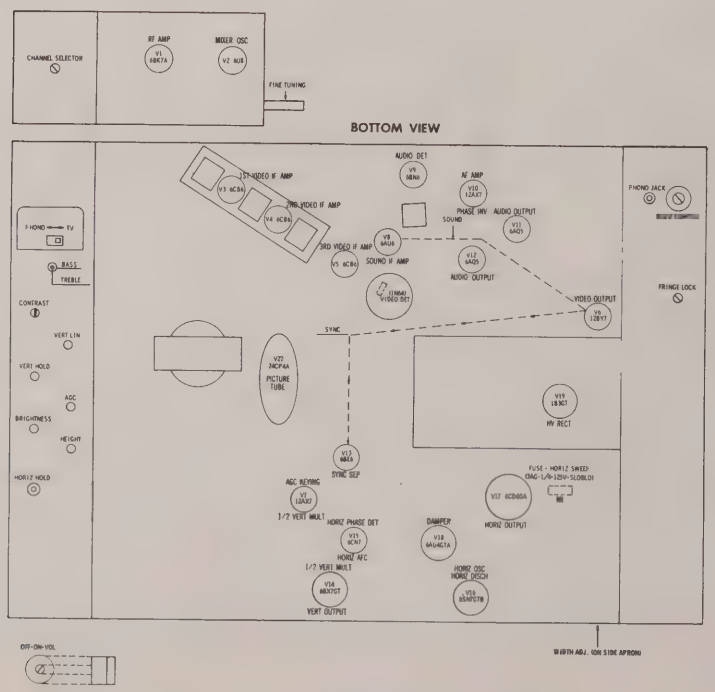


FIG. 6

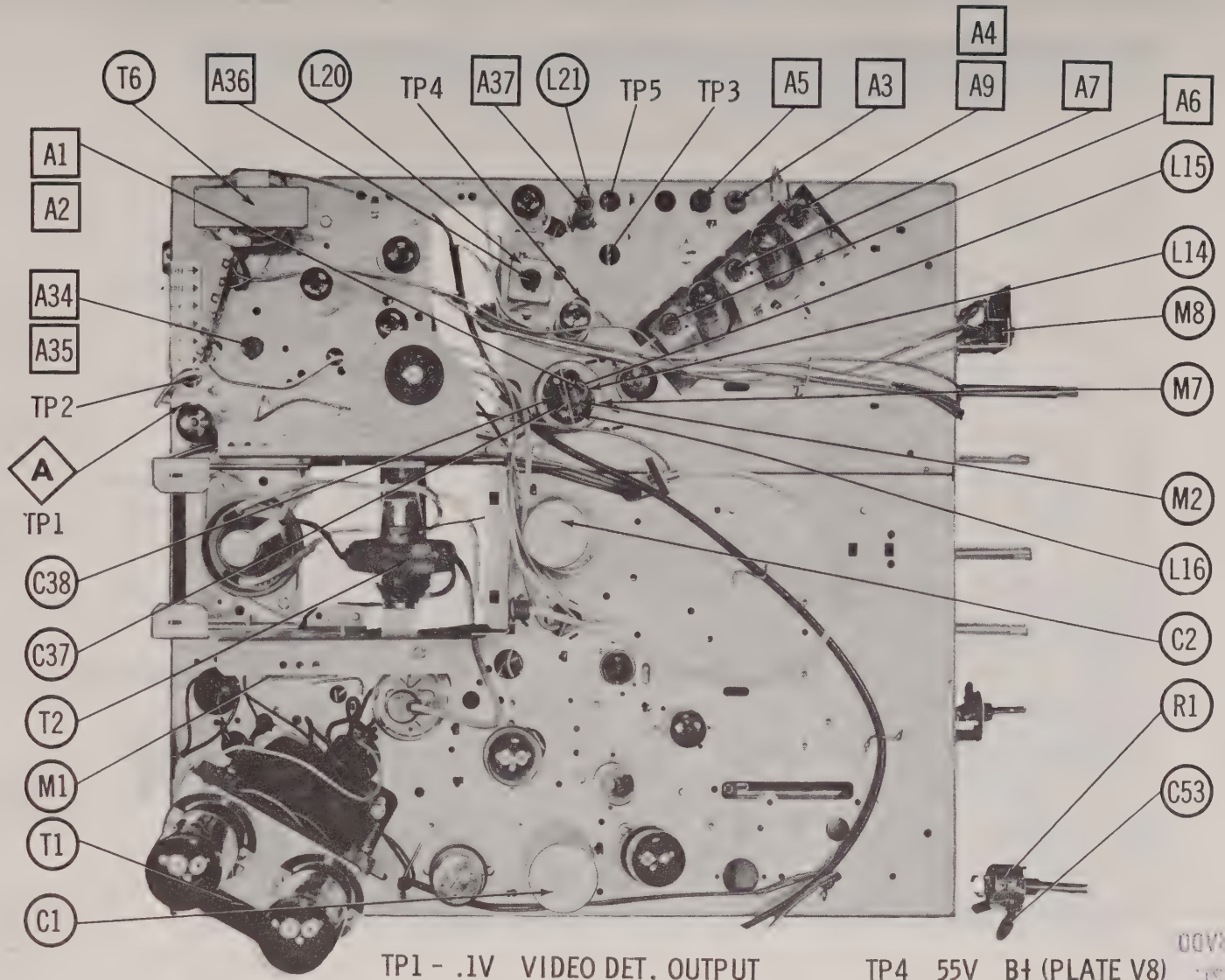
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7A	†750Ω	50K	INF	0Ω	.1Ω	INF	3Meg	47Ω	0Ω
V2	6U8	†10K	68K	†100K	.1Ω	0Ω	†260Ω	0Ω	2200Ω	12K
V3	6CB6	1Meg	450Ω	.1Ω	0Ω	▲ 470Ω	▲ 470Ω	0Ω		
V4	6CB6	60K	▲15Ω	.1Ω	0Ω	†500Ω	†500Ω	60K		
V5	6CB6	220Ω	340Ω	.1Ω	0Ω	†5600Ω	†5600Ω	0Ω		
V6	12BY7	15Ω	2700Ω	15Ω	0Ω	0Ω	.1Ω	†500Ω	†17K	15Ω
V7	12AX7	680K	3K	● 6500Ω	.1Ω	.1Ω	●▲ 5Meg	● 400K	0Ω	0Ω
V8	6AU6	100K	0Ω	.1Ω	0Ω	†32K	†32K	0Ω		
V9	6BN6	● 400Ω	.3Ω	.1Ω	0Ω	†22K	4.7Ω	▲ 2.7Meg		
V10	12AX7	†68K	45K	1200Ω	0Ω	0Ω	†68K	● 500KΩ	2200Ω	.1Ω
V11	6AQ5	100K	100Ω	.1Ω	0Ω	†750Ω	†500Ω	100K		
V12	6AQ5	60K	100Ω	.1Ω	0Ω	†750Ω	†500Ω	60K		
V13	6BE6	18K	0Ω	.1Ω	0Ω	†60K	†47K	10Meg		
V14	6BX7GT	1.8Meg	†800Ω	● 500Ω	1.8Meg	†800Ω	● 500Ω	.1Ω	0Ω	
V15	6CN7	3900Ω	1.5Meg	850K	.1Ω	0Ω	560Ω	3.5Meg	†47K	.8Ω
V16	6SN7GTB	47K	▲ 250K	0Ω	30K	†47Ω	10K	0Ω	.1Ω	
V17	6CD6GA	TP	.1Ω	0Ω	TP	680K	TP	0Ω	†6K	TOP CAP ▲ 7.5Ω
V18	6AU4GTA	NC	NC	350K	NC	†47Ω	NC	0Ω	.1Ω	
V19	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ▲ 280Ω
V20	5U4GA	NC	20K	NC	17Ω	NC	18Ω	NC	20K	
V21	5U4GA	NC	20K	NC	17Ω	NC	18Ω	NC	20K	
V22	24CP4A	0Ω	50K	PIN 10 ▲ 82K	PIN 11 ●† 270KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 2 OF V20.
▲ MEASURED FROM PIN 7 OF V4.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 3 OF V18.
TP - TIE POINT
NC - NO CONNECTION.



TUBE PLACEMENT CHART

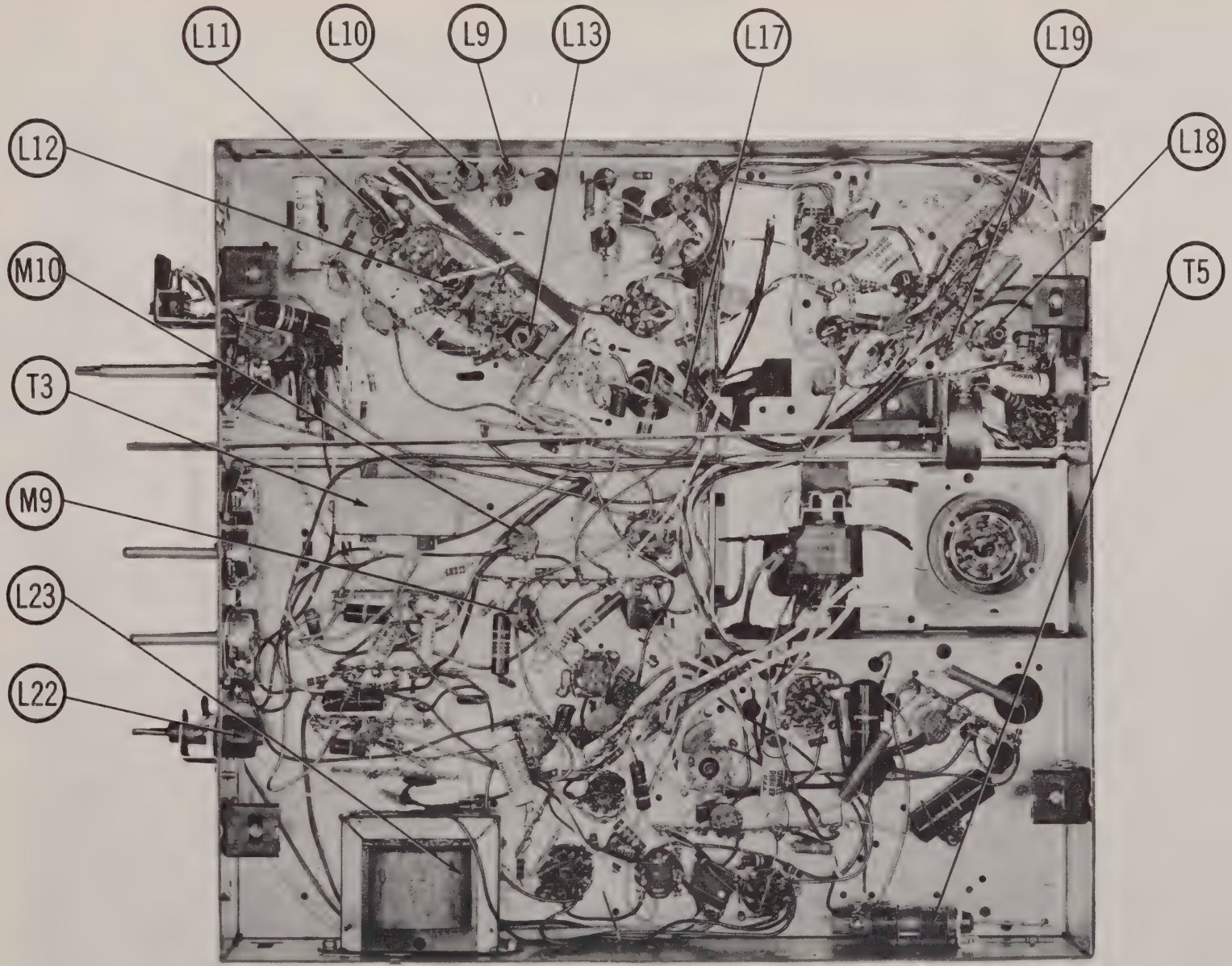


TP1 - .1V VIDEO DET. OUTPUT
TP2 80V CATHODE BIAS (V22)
TP3 5.7V BIAS
TP4 55V B+ (PLATE V8)
TP5 75V B+ (V9)

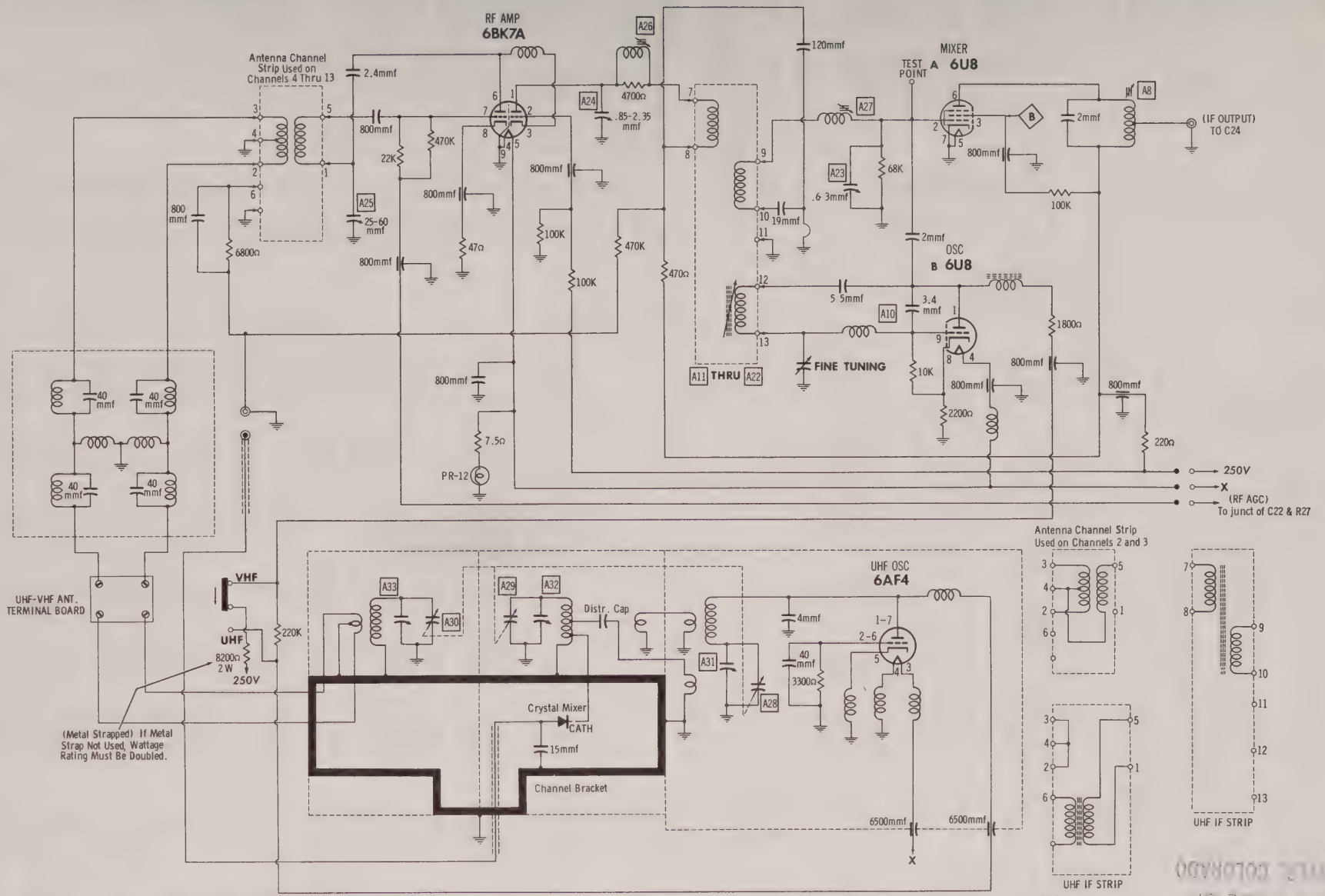
CHASSIS TOP VIEW

Y2671R, RU, Y2672E, EU (Ch. 22V21, U)

ZENITH MODELS



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF Tuner Part No. S23115, and VHF Tuner Part No. S23113, Used With Models Y2671RU, and Y2672EU.

ALTERNATE VHF-UHF TUNER SCHEMATIC

ZENITH MODELS
Y2671R, RU, Y2672E, EU (Ch. 22V21, U)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BK7A	
V2	Mixer-Oscillator	6U8	
V3	1st. Video IF Amplifier	6CB6	
V4	2nd. Video IF Amplifier	6CB6	
V5	3rd. Video IF Amplifier	6CB6	
V6	Video Output	12BY7	
V7	AGC Keying-Vert.Mult.	12AX7	
V8	Sound IF Amplifier	6AU6	
V9	Audio Detector	6BN6	
V10	AF Amplifier-Phase Inv.	12AX7	
V11	Audio Output	6AQ5	
V12	Audio Output	6AQ5	
V13	Sync Separator	6BA6	
V14	Vert. Mult. -Output	6BX7GT	
V15	Horiz. Phase Det.- Horiz. AFC	6CN7	
V16	Horiz. Osc.-Horiz.Disch.	6BY7GTB	
V17	Horiz. Output	6CD6GA	
V18	Damper	6AU4GTA	
V19	HV Rectifier	1B3GT	
V20	LV Rectifier	5U4GA	
V21	LV Rectifier	5U4GA	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ZENITH PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V22	24CP24A ①	24TP4/ 24CP24A ①	24CP24A ①	① Aluminized ② Silver screen "86"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	400	23-2587	AFH4-03-40	FP421.6 / TC60	FP421.6 / BR435	TMQ150	Q-025 / MT-4540	TVL-4872
B	80	400							
C	30	400							
D	40	350							
C2A	4	350	23-2479	AFH4-130-75	DI43	FP454.6	TMQ172	Q-442 / MT-4504	TVL-4805
B	40	400							
C	100	50							
D	10	475							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	2.5-6		23-2321							
C4	1500			BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C5	5.4		23-2596							
C6	900		23-2577							
C7	800		23-2577							
C8	800		23-2577							
C9	800		23-2577							
C10	.65-2.3		23-2453							
C11	800		23-2321	BPD-0068	DD-801	G067	811-021		5GA-T5	
C12	900		23-2577							
C13	150		23-2591	N750-G220	TCN-120	N044	NP6L-121		5TCU-T12	
C14	18		23-2406							
C15	6-9		23-2504							
C16	2		23-2454							
C17	5.6		23-2499							
C18	3.4		23-2593							
C19	800		23-2577							
C20	2		23-2585							
C21	800		23-2577							
C22	.00400			BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C23	.15	300	23-2147	P388N-15		CUBSP15		PT4015	2TM-P15	
C24	470		23-2	BPD-00047	DD-471	KD69	811-471	UC-5347	5GA-T47	
C25	8		23-2481	NP0-DI8.2		EO15	NP6A-8R2			
C26	17		23-2594							
C27	30		23-2580		TCZ-30	Z028	NP0L-300			
C28	24		23-2515	NP0-DI25	TCZ-24	Z025	NP0L-240	ZT-5425	5TCC-Q25	
C29	45		23-2600	NP0-DI47	TCZ-47	Z033	NP0-338-470	ZT-5447	5TCC-V47	
C30	330		23-2309	S2330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C31A	1000		23-31	BPD-1X001	DD2-102	DK069	813-001	DCD-521	5HK-RD1	
B	1000									
C32	470		23-2302	S470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C33	1000		23-27	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C34	470		23-2534	BPD-00047	D6-471	TP46	811-471	UC-5347	5GA-T47	
C35	470		23-2327	S3470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C36	1000		23-2113	S1000	D6-102	TP52	GP2L-102	UC-531	5GA-D1	
C37	4.8		23-2560	NP0-DI4.7	TCZ-4R7	Z020	NP0A-4R7	ZT-5547	5TCC-V47	
C38	7		23-2378	NP0-DI8.2	TCZ-8R8	Z034	NP0A-8R8	ZT-5568	5TCC-V68	
C39	.033	300	23-2071	S33	D3-303	CUB4S22		PT4033	2TM-S33	
C40	47		23-2467							
C41	.1	300	23-1727	P388N-1	DF-104	CUB3P1		PT401	2TM-P1	
C42	.033	300	23-2072	BPD-02	DF-303	CUB4S22		PT4133	2TM-S22	
C43A	1000		23-31	BPD-3X001	DD2-102	DK069	813-001	DCD-521	5HK-ZD1	
B	1000									
C44	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C45	3		23-2343	NP0-DI3	TCZ-3R3	Z007	NP0A-3R0	ZT-553	5TCC-V33	
C46	50		23-2460	S150	D6-500	TP30	GP1K-500	UC-545	5GA-Q5	
C47A	1000		23-31	BPD-3X001	DD2-102	DK069	813-001	DCD-521	5HK-ZD1	
B	1000									
C48	10		23-2371							
C49	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C50	680		23-2330	S1680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C51	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C52	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C53	100		23-3	BPD-0001	DD-101	G043	801-101	UC-531	5GA-T1	
C54	.047	600	23-1844	BPD-05	DF-503	CUB5S47		PT5147	2TM-S47	
C55	.047	600	23-1844	BPD-05	DF-503	CUB5S47		PT5147	6TM-S47	
C56	1000		23-27	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C57A	100		23-23	BPD-0001	DD-101	G043	801-101	UC-531	5GA-T1	
B	100			BPD-0001	DD-101	G043	801-101	UC-531	5GA-T1	
C58	.047	400	23-1844	BPD-05	DF-503	CUB5S47		PT5147	6TM-S47	
C59	.47	300	23-2148	P388N-47		CUB3P47		PT4047	2TM-P47	
C60	.001	1000	23-1851	P1068N-001	DD-103	CUB1SD	1R5KV-102	PT4S1	10TM-D1	
C61	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C62	10000		23-3	BPD-01	DD-103	KD83	811-01	DC-511	5HK-S1	
C63	.047	600	23-1844	BPD-05	DF-503	CUB5S47		PT5147	6TM-S47	
C64	470		23-2	BPD-00047	DD-471	KD69	811-471	UC-5347	5GA-T47	
C65	3300		23-11	BPD-0033	D6-332	K977	811-0033	UC-5323	5HK-D33	
C66	27		23-2459	S27	D6-270	TP35	831-270	UC-5437	5GA-Q27	
C67	.0033	400	23-2535	1464-0033		1R5D33			MB-133	
C68	.1	400	23-2061	P468N-1	DF-104	CUB4P1		PT401	4TM-P1	
C69	.01	300	23-2565	1464-01		1UB3E1			MB-11	
C70	.0047	600	23-1849	1464-0047		1R5D47			MB-347	
C71	.047	200	23-1778	BPD-05	DF-503	CUB5S47		PT4147	2TM-S47	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP	VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C72	100		23-1443	NP0-SI100	D6-101	2SR5T1	801-101	MCB235	MS-31	
C73	120		23-2502	NP0-SI130	D6-131	2SR5T13	811-131		MS-312	
C74	4700		23-24	BPD-0047	DD-473	KD78	811-0047	UC-5247	5HK-D47	
C75	1000		23-17	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C76	470		23-2	BPD-00047	DD-471	KD69	811-471	UC-5347	5GA-T47	
C77	.01	400	23-1809	BPD-01	DD-103	CUB4S1	GP3-333-103	PT401	4TM-S1	
C78	1	300	23-1777	P382N-1		DF-104	CUB2P1	PT401	2TM-P1	
C79	680		23-2135	1464-00068	D6-681	1R5D68	811-681		MB-368	
C80	1500	500	23-2689	BPD-0015	D6-152	1W5D15	801-0015	DC-5515	1FM-215	
C81	1100		23-2859	1464-0011		1R5D11			MB-311	
C82	1000		23-2596							
C83	470		23-2534	1464-00047	D6-471	2SR5T47	811-471		MB-347	
C84	1000		23-17	BPD-001	DD-102	KD69	801-001	DC-521	5HK-D1	
C85	2200		23-18	BPD-0022	D6-222	K073	811-0022	UC-5222	5HK-D22	
C86	.1	600	23-1841	P688N-1		DF-104	CUB6P1	PT601	6TM-P1	
C87	100	4000	23-2697							
C88	.1	600	23-2782	P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C89	72	2000								

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2520	B-70-S	A47-1Meg-2	Q13-137	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWE-13	T5-1	UB-26	Attach to R1A
R2A	1Meg	½	63-2578				UF15L / UR354A	Bass (Panel)
B	500kΩ	½	63-2301	SVP-999				Treble (Rear)
R3	500kΩ	½	63-2320	AB-5	A47-1000-S	B11-109	PTA152L	Contrast(Wire-wound)
R4A	1500Ω	½	63-2930	AB-8	A47-1500-S	B11-109	PTA152L	Vert. Linearity
B	Shaft		Not Req.	AK-1	FXS-1/4	Not Req.	Not Req.	Attach to R4A
R5A	750K	½	63-2298	AB-68	A47-750K-S	Q11-136	U-54	Vert. Hold
B	Shaft		Not Req.	AK-4	XSS-3	Not Req.	Not Req.	Attach to R5A
R6A	1ΣK	½	63-2978	AB-30	A47-1ΣK-S	Q11-119	7A1B3L	AGC
B	Shaft		Not Req.	AK-1	FXS-1/4	RQ	Not Req.	Attach to R6A
R7A	250K	½	63-2572	AB-50	A47-250K-S	Q11-128	U-48	Brightness
B	Shaft		Not Req.	AK-4	XSS-3	Not Req.	Not Req.	Attach to R7A
R8A	8.5Meg	½	63-2617	*AB-89	*A47-7.5Meg	eQ11-142	ePTA855L	Height
	with 1Meg stop				-8			
B	Shaft		Not Req.	AK-1	FXS-1/4	RQ	Not Req.	Attach to R8A
R9A	7.5Meg	½	63-2618	AB-98	A47-7.5Meg -8	Q11-143	U-53	Fringe Lock
B	Shaft		Not Req.	AK-1	FXS-1/4	RQ	Not Req.	Attach to R9A
R10	800Ω	2	63-2384		39-800-50			Buzz 100Ω stop (Wire-wound)

† Universal replacement (Mallory exact duplicate part #UR1565).
* Connect 1.5Meg resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R11	22K		63-1641	BTS-22K	
R12	47K		63-1653	BTS-47K	
R13	470Ω		63-1739	BTS-47	
R14	470K		63-1897	BTS-470K	
R15	100K		63-1659	BTS-100K	
R16	100K		63-1659	BTS-100K	
R17	15K		63-1758	BTS-15K	
R18	4700Ω		63-1713	BTS-4700	
R19	22K		63-1641	BTS-22K	
R20	470Ω		63-1711	BTS-470	
R21	10K		63-1638	BTS-10K	
R22	2200Ω		63-1799	BTS-2200	
R23	10K	2	Not Req.	BTS-10K	
R24	68K		63-1663	BTS-68K	
R25	100K		63-1659	BTS-100K	
R26	7.5Ω	2	63-3600		
R27	2.2Meg		63-1936	BTS-2.2Meg	
R28	220K		63-1894	BTS-220K	
R29	220K		63-1894	BTS-220K	
R30	68Ω		63-1737	BTS-68	
R31	470Ω		63-1712	BTS-470	
R32	180Ω		63-1764	BTS-180	
R33	56Ω		63-1733	BTS-56	
R34	120K		63-1673	BTS-120K	
R35	120K		63-1673	BTS-120K	
R36	27K		63-1645		
R37	6800Ω		63-1831		
R38	12K		63-1631	BTS-12K	Note 1
R39	470Ω		63-1713	BTS-470	
R40	15Ω		63-1708	BTS-15	
R41	5600Ω	2	63-3232	BTS-5600	
R42	120Ω		63-1747	BTS-120	
R43	220Ω 5%		63-1756	BTS-220 5%	
R44	15K		63-1634	BTS-15K	
R45	33K		63-1648	BTS-33K	
R46	47K		63-1653	BTS-47K	
R47	22K	2	63-1566	BTS-22K	
R48	15Ω		63-1708	BTS-15	
R49	2200Ω	1	63-2380	BTA-2200	
R50	100K		63-1870	BTS-100K	
R51	330K		63-1884	BTS-330K	
R52	680K		63-1904	BTS-680K	
R53	220K		63-1894	BTS-220K	
R54	47K		63-1653	BTS-47K	
R55	82K		63-1656	BTS-82K	
R56	330Ω		63-1906	BTS-330	
R57	680K		63-1904	BTS-680K	
R58	180K		63-1680	BTS-180K	
R59	82Ω		63-1783	BTS-820	
R60	1800Ω		63-1796	BTS-1800	
R61	100K		63-1870	BTS-100K	
R62	10K		63-1638	BTS-10K	
R63	2.7Meg		63-1939	BTS-2.7Meg	
R64	33K	2	63-3141	BTS-33K	
R65	3300Ω		63-1799	BTS-3300	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R66	68K		63-1663	BTS-68K	
R67	82K		63-1656	BTS-82K	
R68	68K		63-1663	BTS-66K	
R69	1200Ω		63-1769	BTS-1200	
R70	68K		63-1663	BTS-68K	
R71	68K		63-1663	BTS-68K	
R72	150K		63-1877	BTS-150K	
R73	100Ω	2	63-1573	BTS-100	
R74	10K		63-1627	BTS-10K	
R75	3300Ω		63-1799	BTS-3300	
R76	470Ω	7	63-2256		
R77	10K		63-1638	BTS-10K	
R78	10K		63-1638	BTS-10K	
R79	150K		63-1877	BTS-150K	
R80	10Meg		63-1869	BTS-10Meg	
R81	220K		63-1884	BTS-220K	
R82	470K		63-1897	BTS-470K	
R83	150K		63-1877	BTS-150K	
R84	470K		63-1897	BTS-470K	
R85	82K		63-1656	BTS-82K	
R86	47K	2	63-1187	BTS-47K	
R87	22K		63-1641	BTS-22K	
R88	220K		63-1894	BTS-220K	
R89	100K		63-1870	BTS-100K	
R90	47K		63-1655	BTS-47K	
R91	100Ω		63-1744	BTS-100	
R92	1.8Meg		63-1922	BTS-1.8Meg	
R93	330Ω	1	63-2388	BTA-330	
R94	100Ω		63-1744	BTS-100	
R95	330Ω	1	63-2388	BTA-330	
R96	560Ω		63-1775		
R97	560Ω		63-1775		
R98	1Meg		63-1921		
R99	1Meg		63-1921		
R100	3900Ω		63-1810		
R101	5.6Meg		63-1943		
R102	10Meg		63-1933		
R103	47K	1	63-1194		
R104	560Ω	2	63-1775		
R105	10K	2	63-2345		
R106	33K		63-1641		
R107	47K		63-1655		
R108	22K		63-1641		
R109	56K		63-1653		
R110	100Ω		63-1744		
R111	680K		63-1904		
R112	100Ω		63-1744		
R113	8000Ω	4	63-2379	PW7-8000	
R114	33K	1	63-868		
R115	6200Ω	4	63-2403	PW4-6200	
R116	62K	1	63-1671	BTA-62K	
R117	4700Ω		63-1614		
R118	5.6Ω		63-2383	BW4-5.6	
R119	22K		63-1641	BTS-22K	
R120	330K		63-2907	BTS-220K	

Note 1. Some versions use a 15K resistor in this application (part #63-1634).
Note 2. Some versions use a 68K resistor in this application (part #63-1892).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	520VCT @ 42 4A	5V @ 6A	12.6V @ 5.9A	99-1671	P9739 ①		P-8353X	26R90 ①	

① Drill new mounting holes.
② Use original mounting brackets.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	83-2986 ①					A-8275 ①		D-60F ①
T3	Vert. Output Trans.	95-1460	21000 ②③	A-2823 ②			A-8148 ②	26S75 ③④	A-10EX ②
T4A	Yoke (90°) Horiz (15MH)	95-1466 ⑤	DF508 ⑤	MDF-51 ⑤	23TD1 ⑤	YS0F12 ⑤	DY-13A ⑤	Y-14 ⑤	Y-60-1 ⑤
B	Vert. (60MH)			T51					T-61
T5A	Width-Series Coil (.4-2.5MH)	83-1768		MWC-10				WC-24 ④	
B	Parallel Coil (4-22MH)								

① Complete assembly. Includes: winding and terminal assembly, Zenith part #6-23063 tertiary winding and terminal assembly, Zenith part #6-21364.
② Use 8 to 1 turns ratio.
③ Connect as auto transformer.
④ Drill new mounting hole(s).
⑤ Cut and tape green lead.
⑥ Includes capacitor C89, resistors R96 and R97.
⑦ Use original horizontal yoke damping network with capacitor (C89) across terminals #3 and #7.
⑧ Connect horizontal yoke terminal #3 to yoke plug pin #5, horizontal yoke terminals #2 and #7 to yoke plug pin #4, horizontal yoke terminal #1 to yoke plug pin #6.
† This part may be accepted by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
?					6		6
1					5		5
2					4		4
3					NC See Note ①		NC See Note ①
4					3		3
5					2		2
Special Item —					1		1
					①		①

① To reduce horizontal yoke "ringing", connect 1000Ω, ½ W in series with capacitor C89.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	8.5KΩ	3-4Ω	95-1398	Z1011	A-2904 ①	A-3624	23S56	S-53X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V C	IMP	REPLACEMENT DATA: ZENITH PART No	QUAM PART No	RCA TYPE No	NOTES
SP1	10"	PM	3-4Ω		49-764	10AI0X23.2		① Electrostatic speakers
SP2	3"				S-23829 ①			
SP3	3"				S-23829 ①			

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Fil. Choke	0Ω		30-391				
L2	Tweet.Coil	0Ω		30-431				
L3	RF Coil	0Ω		30-537				
L4	Conv.Grid Coil	0Ω		30-538				
L5	Conv.Shield	0Ω		125-766				
L6	Osc.Coil	0Ω		30-541				
L7	RF Choke	.4Ω		9-18859				
L8	Conv.Plate	7.2Ω		9-23702				Tapped ⑤ 1.3Ω
L9	47.25MC Trap	0Ω		9-21718			6298	
L10	39.75MC Trap	0Ω		9-21719			6235	
L11	1st. Video IF	.1Ω		9-23503				Includes 41.25MC trap
L12	2nd. Video IF	.1Ω	.1Ω	9-17907	17-5004 *	TV-125 *	6234*	
L13	3rd. Video IF	.1Ω	.1Ω	9-19952				
L14	4th. Video IF	.3Ω	.3Ω	9-20633				
L15	Series Peaking Coil	5.5Ω		9-17923	19-3088	TV-121	6177	100 Microhenries
L16	Shunt Peaking Coil	6.5Ω		9-21563	19-3180 ⑧	TV-124 ⑧	6844 ⑧	180 Microhenries wound in series on 2.7K resistor
L17	Series Peaking Coil	.8Ω		9-21859	19-1004		6810	
L18A	4.5MC Trap	1Ω		9-21492				
B	1st.Sound IF	1.3Ω						
L19	Series Peaking Coil	5.2Ω		9-21563	19-3135 ⑧		6153 ⑧	136 Microhenries, wound on 5.6K resistor
L20	2nd. Sound IF	.3Ω	.3Ω	9-19962				
L21	Quadrature Coil	4.7Ω		9-19020			1680 ⑧	

* Use adaptor plate.
⑧ Series with 2.7KΩ resistor.
▲ Parallel with 5.6KΩ resistor.
● Drill mounting hole.

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PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L22	170Ω		S-19743	19-1577		6324				Tapped @ 87Ω

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.350A	46.5Ω	2.45 HY	95-1399					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1/4A 125V	136-22		313.250 (3AG S/B 1/4A)	357001	MDL 1/4	4405

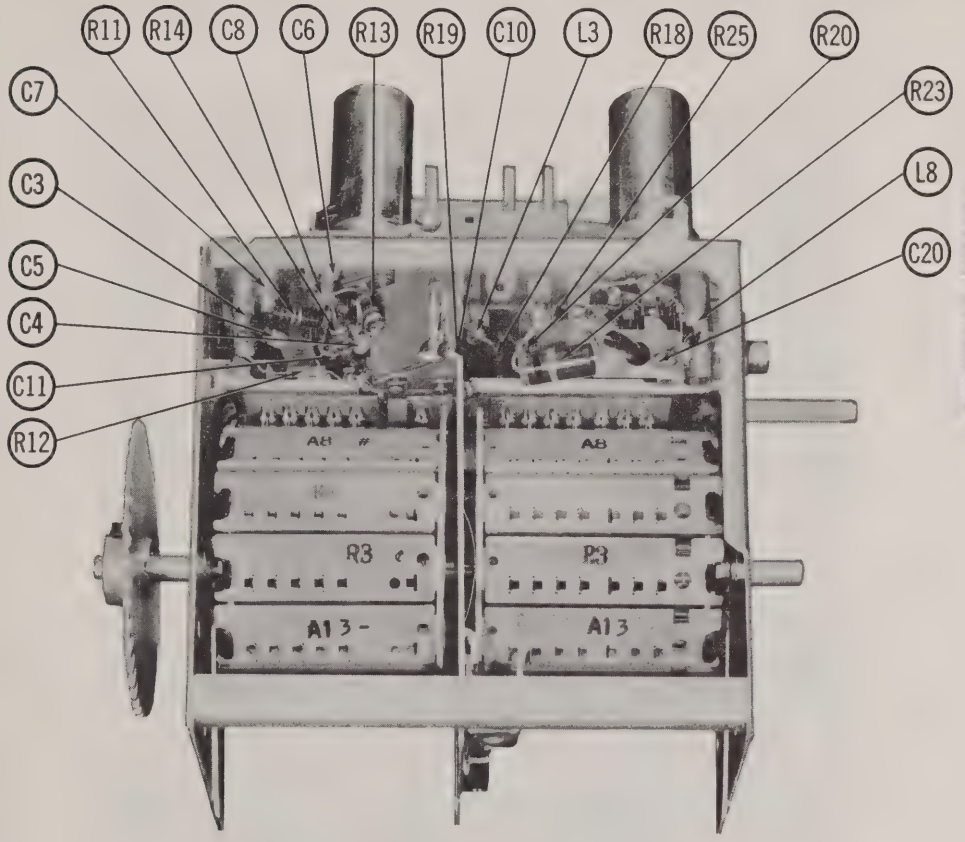
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		ZENITH PART No.	SYLVANIA PART No.	
M2	1N64	103-1	1N60	Video Detector (Pigtail)

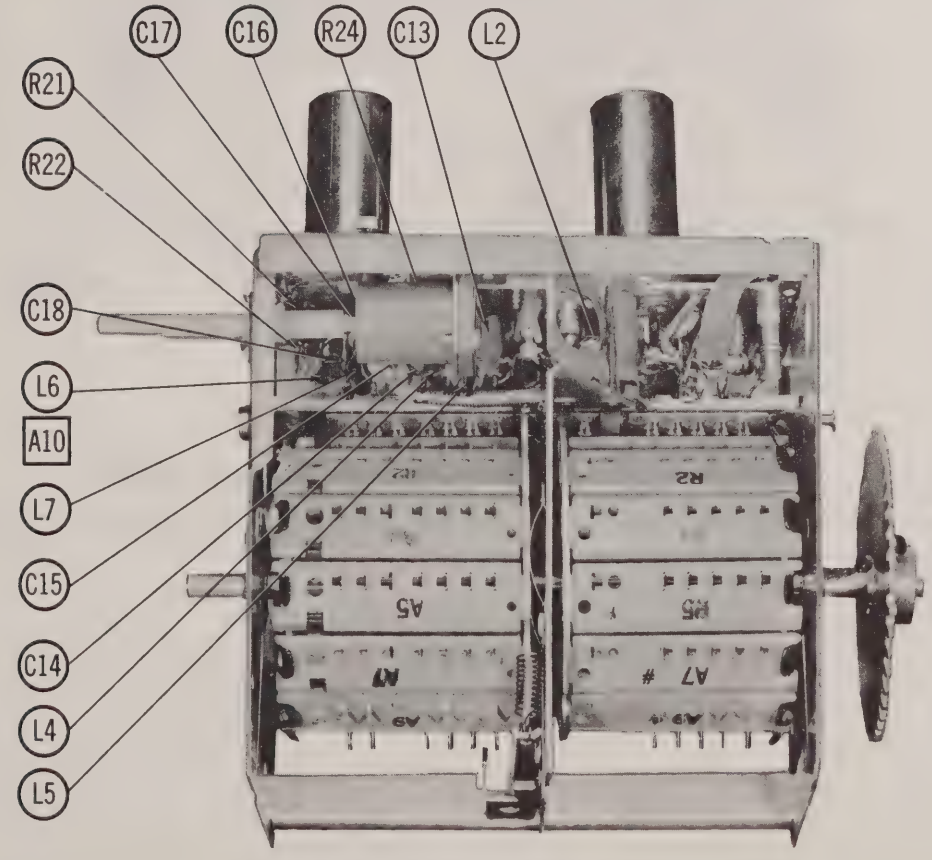
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Dial Light	100-166	#PR12
M4	Tuner	S-21735	VHF (12 position) Models Y2671R, Y2672E
	Tuner	S-23113	VHF (13 position) Models Y2671RU, Y267EU
M5	Tuner	S-23115	UHF - Models Y2671RU, Y2672EU
M6	Trap		VHF Ant. input filter
M7	Video Det.Assy.	S-21686	Includes M2, L14, L15, L16, C37, C38
M8	Switch	85-555	TV-phono (3 pole - 2 position, slide type)
M9	Integrator	87-5	Vertical
M10	Integrator	87-4	Vertical
M11	Focus Magnet	S-22252*	Includes centering device
M12	Ion Trap	S-171461	
M13	Correction Magnet	S-18763	
M14	Correction Magnet	S-18763	
	Cabinet	14-1972R	Models Y2671R, RU
	Cabinet	14-1973E	Models Y2672E, EU
	Knob	46-1464	On-off-volume
	Knob	S-24198	VHF channel selector
	Knob	S-22408	VHF fine tuning
	Knob	S-22935	Horiz. hold, brightness, contrast
	Knob	46-1118	Vert. Hold
	Knob	46-1018	Tone (Treble)
	Knob	46-1055	Tone (Bass)
	Knob	S-22025	UHF dial indicator - Models Y2671RU, Y2672EU
	Safety Glass	192-207	

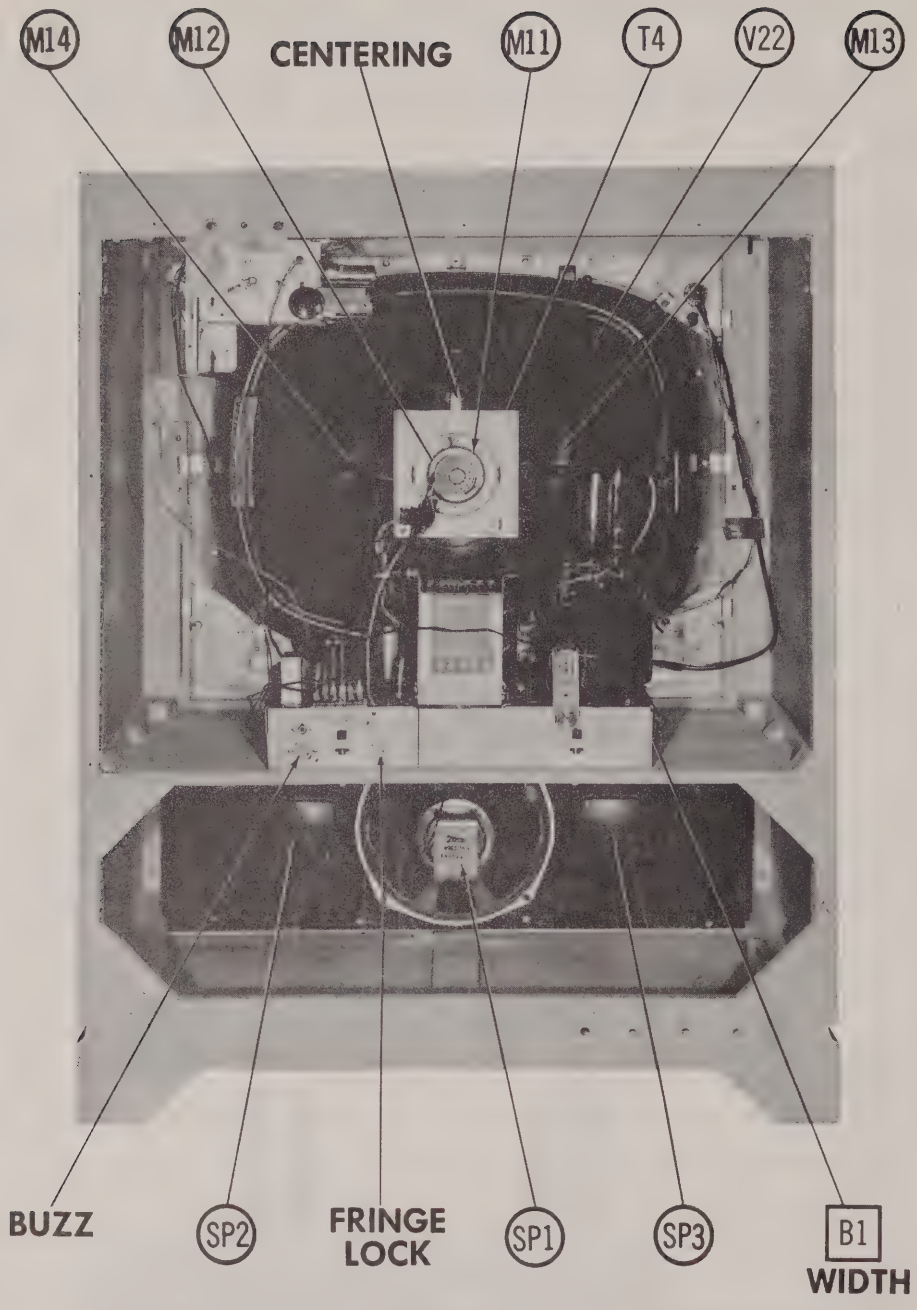
* Alternate part #S-20344, S-24358.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

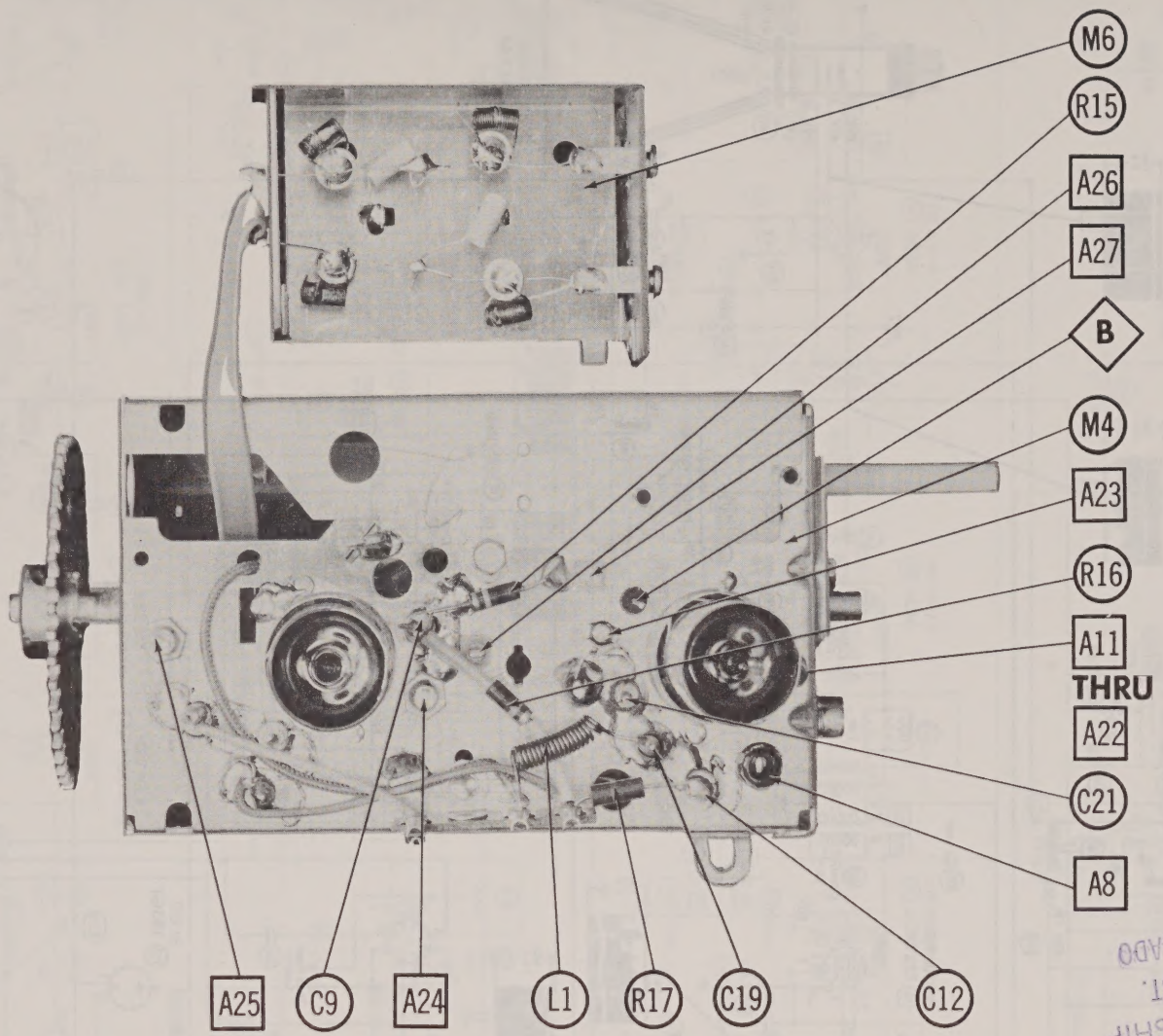


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.
Adjust the horizontal hold until the picture synchronizes horizontally.

Adjust the width slug (B1) for a picture slightly wider than necessary to fill the picture mask horizontally.



RF TUNER-TOP VIEW

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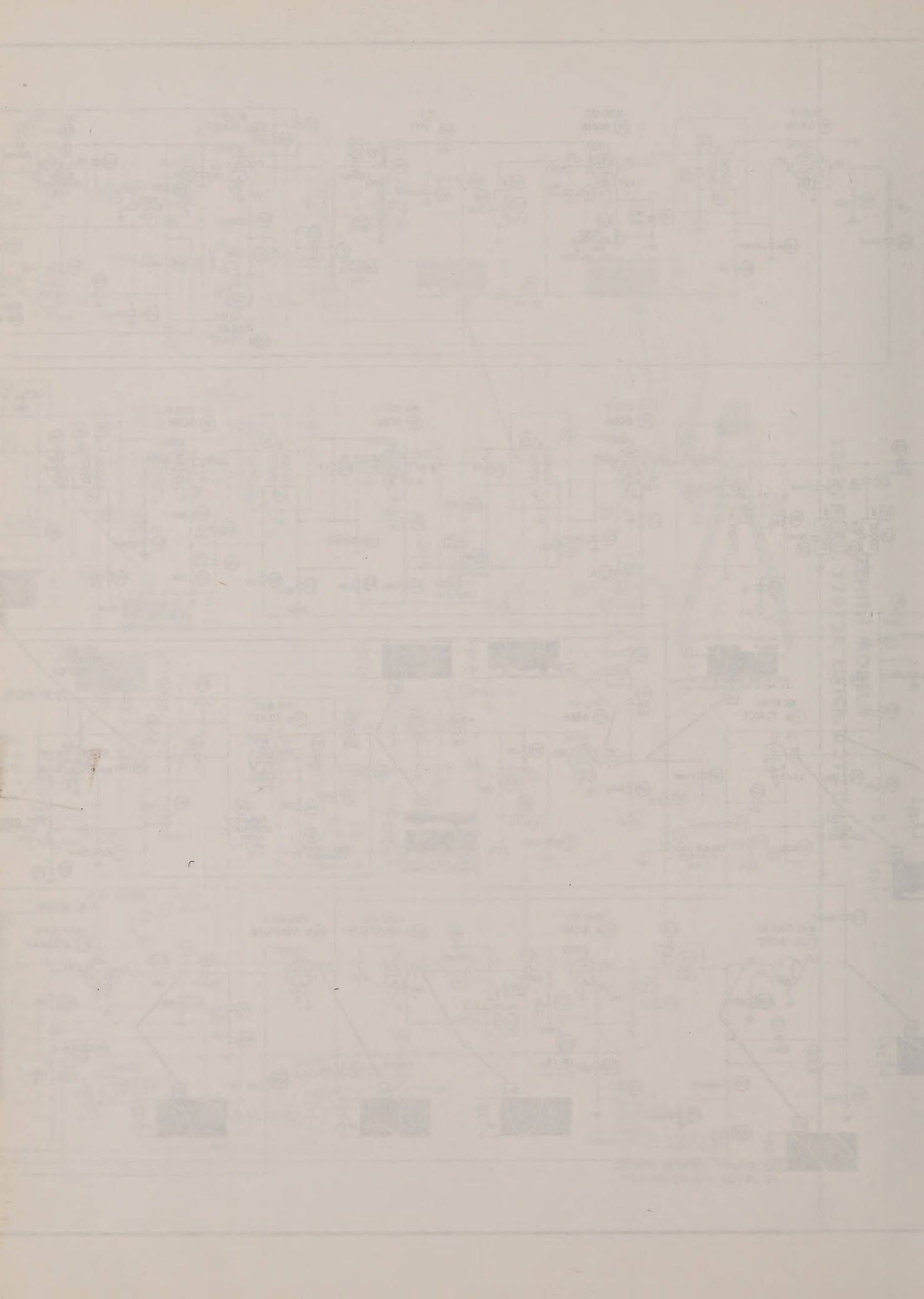

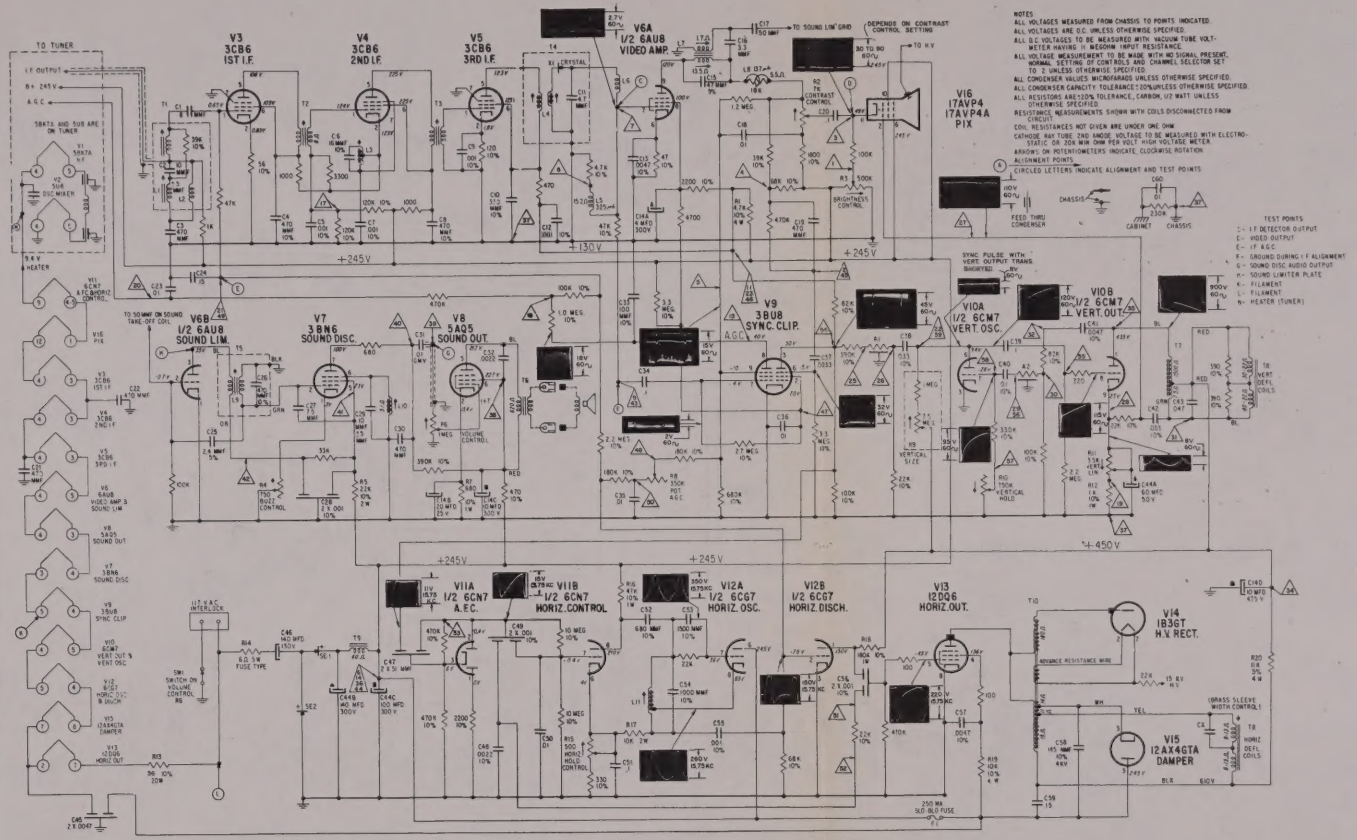

ZENITH MODELS
Z1814R, Y (Ch.16Z20)
Z1816C, E, R (Ch.16Z21)
Z1818C, E, R (Ch.16Z21)

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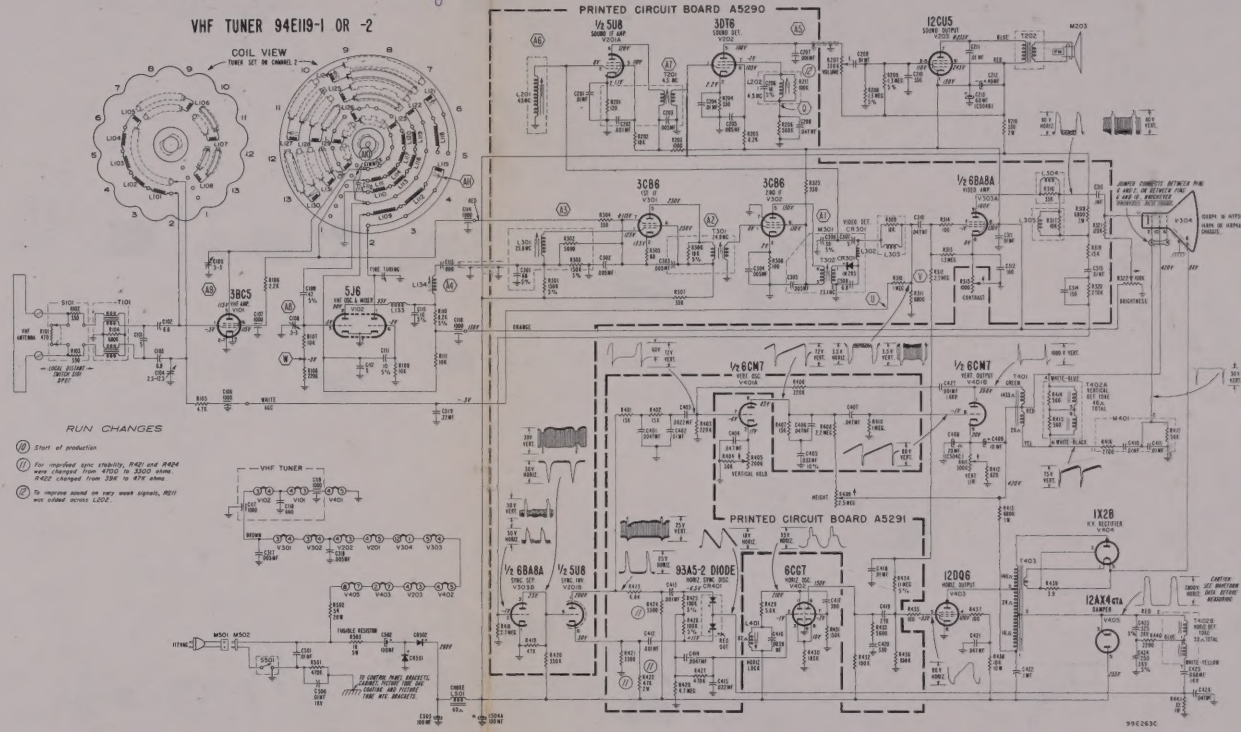

ADMIRAL CHASSIS
14UY3B
14UY3C

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